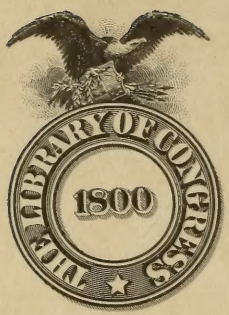
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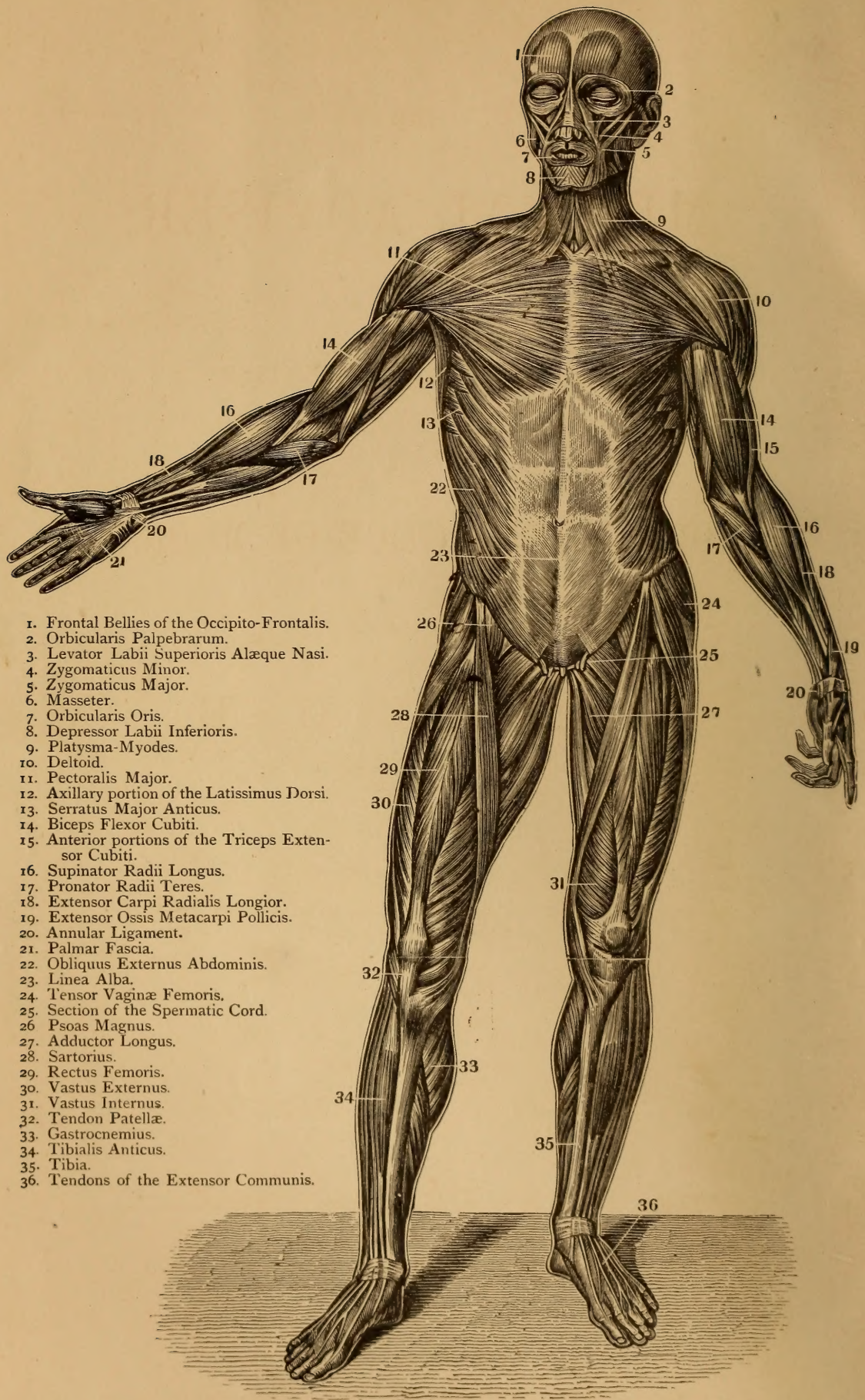

1. Frontal Bellies of the Occipito-Frontalis.
2. Orbicularis Palpebrarum.
3. Levator Labii Superioris Alæque Nasi.
4. Zygomaticus Minor.
5. Zygomaticus Major.
6. Masseter.
7. Orbicularis Oris.
8. Depressor Labii Inferioris.
9. Platysma-Myodes.
10. Deltoid.
11. Pectoralis Major.
12. Axillary portion of the Latissimus Dorsi.
13. Serratus Major Anticus.
14. Biceps Flexor Cubiti.
15. Anterior portions of the Triceps Extensor Cubiti.
16. Supinator Radii Longus.
17. Pronator Radii Teres.
18. Extensor Carpi Radialis Longior.
19. Extensor Ossis Metacarpi Pollicis.
20. Annular Ligament.
21. Palmar Fascia.
22. Obliquus Externus Abdominis.
23. Linea Alba.
24. Tensor Vaginæ Femoris.
25. Section of the Spermatic Cord.
26 Psoas Magnus.
27. Adductor Longus.
28. Sartorius.
29. Rectus Femoris.
30. Vastus Externus.
31. Vastus Internus.
32. Tendon Patellæ.
33. Gastrocnemius.
34. Tibialis Anticus.
35. Tibia.
36. Tendons of the Extensor Communis.

VIEW OF THE ANTERIOR MUSCLES OF THE BODY.

c. #8139-1

THE

MEDICAL ADVISER:

A

FULL AND PLAIN TREATISE

ON THE

THEORY AND PRACTICE OF MEDICINE,

ESPECIALLY ADAPTED TO

FAMILY USE.

BY

REZIN THOMPSON, M. D.,

PERMANENT MEMBER OF THE AMERICAN MEDICAL ASSOCIATION, AND AUTHOR OF "THOMPSON ON FEVER," ETC.

10

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PUBLISHERS' PREFACE.

In the course of a long experience in the publication and sale of standard works, the publishers have everywhere found a great demand for a reliable household medical work. While the volume of medical science contains mysteries which it must ever be the province of professional men to unravel, it does not follow that to the general public it must forever remain a sealed book. That a majority of the intelligent men and women of our country are profoundly ignorant of the nature, causes, and proper treatment of the diseases to which they are liable, is because this knowledge, the result of scientific investigation and research, has remained in the language and nomenclature of science, and practically beyond their reach.

What is needed is a full, accurate, and reliable treatise, giving a clear analysis and description of the nature, causes, and symptoms of the diseases to which flesh is heir, with their remedies and mode of treatment, written in language intelligible to the non-professional reader.

Many attempts have already been made to supply this universal need. Of these, some have been brought forward by medical mountebanks, who sought, under the disguise of a medical treatise, to puff their own nostrums; some have been devoted almost entirely to a favorite theory; others have been mere essays on family government, morals, etc.; while still others have been scarcely more than prescription books, containing but little medical information.

It has seemed to us that the following are some of the

requisites of a work which would command the confidence and approval of the public.

First of all, it must be written by a physician of undoubted character and reputation. If men will not trust their lives in the hands of a physician, except they have confidence in his skill and judgment, neither should they put their faith in a book whose author does not inspire similar confidence. He must therefore be a man of thorough scientific attainment, of large experience, and ripe judgment; one whose name alone will be a sufficient guarantee of the accuracy and reliability of his statements.

Second: The *aim* of the work must be, not to promulgate a special theory, but simply to impart correct and reliable medical information.

Third: In its *subject-matter* it must be full and comprehensive. It should give the reader such information as will make him an intelligent guardian of his own health, enable him to detect the approach of disease, and apply a remedy before it has fastened itself upon his system.

It should give careful directions for the treatment of every disease described, and, so far as possible, suggest remedies simple and easily obtained.

Fourth: The *style* of the work should be plain, clear, and direct. Technical terms and phrases should be avoided, as far as possible, and, where used, be fully explained. Simplicity and clearness should also be studied in the arrangement and classification of the work, and the index should be full and complete.

We believe that the work we now offer combines these requisites in an eminent degree. It has already received an unmistakable indorsement in the rapid exhaustion of the first edition, and we feel confident that it needs only to be brought to the notice of all to make it a *Medical Adviser* to every family in the land.

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INTRODUCTION.

The author having been many years engaged in observing and treating disease, and ever watchful for any developments which might throw new light upon its nature, or lead to a better or safer treatment, came to the conclusion that he had made some progress; and, from time to time, made known to the profession his views upon various subjects through the medium of the press, medical societies, and occasional lectures to the students of Nashville Medical College. Finally he published a little book, entitled "Thompson on Fever, Dysentery, etc.," in which he gave whatever he esteemed new and valuable upon the subjects treated of in the work. The work was kindly received by the profession, and the treatment recommended has been generally found to be much more successful than any other previously adopted; in fact, the success of most of those who have reported appears to be unprecedented. As the first edition was soon exhausted, a second was imperatively called for; the author accordingly prepared an enlarged edition, which was rapidly disposed of. Quite a number of farmers and others, not of the profession, obtained the work, and had been enabled to manage their own cases of fever, pneumonia, dysentery, etc., very successfully. But as it was written expressly for physicians, though not abounding in technicalities, yet was not quite plain enough to suit the common reader; and then only a few diseases having been treated of, many such importuned the author to write

a general practice, suited to families, so that they might have something to guide them in the absence of a physician. But he felt rather a dislike for *family medical books*, being perhaps prejudiced against them by the fact that the most he had examined had been written by very incompetent persons, abounding in bad treatment and worse language, the writers not knowing how to be plain without descending to vulgarisms. Others, on the contrary, were written in a style above the comprehension of ordinary readers, and all far behind the teachings of the age.

That a work written in good, plain style, and so worded that common decency would not be outraged by having it read aloud in the family, and containing such information as would enable the reader to guard against the encroachment of many diseases, or arrest them in the forming stage, would be eminently useful, and prevent much suffering, no one can deny; and as many partial friends had impressed it upon the author that he possessed the peculiar qualifications necessary to write such a work as it should be done, he finally came to the conclusion that he could in this way do some good for his fellows, and obtained his own consent to undertake the task.

But being fully aware that it was no light task—a much harder one than preparing a general work for the profession would be, because it would be more minute and more carefully worded, and greater pains required to say just enough to be understood, and not so much as to weary or produce confusion—all this, and more, being perceived and appreciated, occasioned a shrinking from the task; and would perhaps have occasioned an indefinite postponement of the work, but that a friend, who had devoted much of his life to disseminating family medical works among the people, had come to the conclusion

that no work of the kind could then be obtained that was up to the teachings of the age, and approached me with the purpose of obtaining my aid in making such a revision as would remedy this serious defect. I accordingly looked over the works which he had been circulating, to see if such a thing could be easily done, and finally informed him that the works were so exceedingly imperfect in style, and embraced so little really valuable information, being taken up principally with very poor dissertations upon morals, family government, etc., and then were so very far behind the present improvements in medicine, that I could not undertake the task of a revision, as it would be a more onerous duty than writing a new work—which he importuned me to undertake, as he had made arrangements for going into the business extensively, and was obliged to have a work published.

After mature deliberation I came to the conclusion that perhaps duty enjoined upon me the task, and consented to undertake it. How well I succeeded in meeting the expectation of friends may be inferred from the fact that a large sale of the work was effected in a very short time; but our unhappy troubles coming on suddenly put a stop to the enterprise. When the present publishers determined to re-issue the work they requested the author to revise it; for, as near ten years had elapsed since the last edition was printed, it was reasonable to suppose that changes would be necessary to bring the teachings up to the advancements of the age. After looking over it very carefully, although he thought it advisable to treat upon several subjects not noticed before, and enlarge upon others, yet he found no occasion for any change, either in theory or practice. The truth is that when this work was first written it was much in advance of medical *teaching* at that time. The author had, for near forty years, labored zeal-

ously and unceasingly in the search of truth in medical science, unfettered by prejudice and untrammeled by authority further than enlightened experience, and truth gave it weight. He, as it were, entered into the mines himself, dug up the primal formations, smelted the ores, threw away the dross, and preserved only the pure gold. The wise man hath said that "truth is more precious than gold." It is also more enduring. What was true once is true now, and will be forever.

While the author was searching after truth in medical science, multitudes all over the earth were engaged in the same pursuit, and quite a number in different parts of the world, without co-operation, without consultation, arrived at the same conclusion at nearly the same time. But the author claims to have been the first who published a systematized view of what is now known as *conservative medicine.*

Twenty years ago the doctrines which he taught were so new that their avowal caused him much persecution, and came near causing him to be ostracized from the brotherhood of *legitimate medicine.* But when some of the lights of the profession in Europe, some years later, came out with an avowal and able defense of substantially the same doctrines, the opposition began to die away, and now the author's *peculiar views* are the standard doctrines of the profession. But, notwithstanding that the medical world has revolved until it occupies the same plane upon which he stood twenty years ago with regard to science, yet he claims and assuredly believes that no *materia medica*, no means of cure, *has yet been published* which will compare in efficacy with the simple remedies which are *chiefly* relied on in this work. A further experience of ten years, part of which he did an extensive practice, and the experience of hundreds of other intelligent prac-

titioners who have adopted his mode of practice, have fully sustained all that he ever claimed for his favorite remedies. No change has, therefore, been made, in this respect, in this edition of the Adviser; but, in order that its readers may have a chance of varying the means of cure without injury to patients, he has introduced into the chapter on formulas quite a number of prescriptions not in any former edition, all of which are based upon his own experience, or furnished by the very best practitioners of the country, and commend themselves to his approbation by their being true to correct medical science.

As the author has for over forty years been a member of the regular medical profession, and has labored hard, if not successfully, in advancing its usefulness and guarding its honor, he of course feels himself identified with its interests, and would be slow to undertake any enterprise that would in any way be in opposition to the one or the other. But he is very certain that to furnish the people with correct medical information is the only successful means of securing proper respect for honorable, scientific medicine, in contradistinction to the isms, humbuggery, and quackery of the day.

The fact is, that the profession has been sadly lacking in its duties to itself, and to the people, in this respect. No adequate efforts have ever been made for furnishing the masses with a pure and correct medical literature, and of course the people receive their medical ideas principally from quack advertisements, almanacs, and puffs of charlatans, whose trade it is to decry and caricature the regular profession. Even the very best writers of family medical books have not thought it worth while to reason with the people, or teach them "the why and the wherefore" of their prescriptions; taking it for granted, I suppose, that the peo-

ple would not comprehend the science of diseased action. But I am very confident that this is a mistake, and that if the truth is presented in a plain and clear style, it will be attractive, and will be studied, and understood sufficiently at least to enable the reader to perceive the distinction between science and pretence. But I do not entertain the idea that this or any other work will ever make the people their own physicians, so as to supersede the services of the men who make medicine the business of their lives. Nothing short of entire devotedness to the subject can qualify a man for the important business of taking charge of the lives of his fellows; and unceasing attention to the subject is essential for keeping posted as to the progress of the science, and the varying types of disease.

If this be true, says one, why should I purchase your work, and waste time in reading it, if I have to call on a doctor at last when sickness comes?

There are sufficient reasons, my good friend, why you should. First, if the work is written as it should be, as a purely literary work its perusal and study will pay by the enlargement of your ideas and the improvement of your style, if that is not already good. Secondly, it will pay by enabling you to know the approach of disease, and, by the timely use of means, prevent its full development. Thirdly, it will enable you to manage many cases without medical advice, and by being familiar with the signs of amendment, or of a dangerous turn of the disease, will prevent you from sending for your physician unnecessarily, or of deferring it too late. And, fourthly, it will pay by qualifying you for better judging of the qualifications of those who hold themselves as physicians; for to be guarded against pretence and imposture, or even stupidity assuming the garb of wisdom, is no small matter—your all

of life may depend on it. So I insist that you procure correct medical information; and if this work should fail in presenting it in the most attractive form, or in the simplest language, recollect it deals in grave truths, and not in pleasing fancies, and that unknown facts often require the use of words also previously unknown; but, at any rate, seek medical information, and if you can find it purer or better dressed elsewhere, seek it there.

But, although the author claims to be of the regular medical profession, and has in this work given its teachings as set forth by the best and latest authors, yet in some things he differs from many of his brethren, and has given the reader the benefit, as he thinks, of this difference, but has also given the treatment by others in such cases. It is, however, only in reference to fever that he holds peculiar views; and since he made these views known, or within the last fifteen years, many of the most prominent physicians, both in Europe and the United States, have advanced very similar doctrines, so that at present the author's peculiar treatment of fevers is in harmony with the tendency of the age; but its unusual success would entitle it to acceptance unsupported by authority.

It is with reference to febrile diseases that the author has felt himself called on more particularly "to give a reason for the faith that is in him," and he hopes to be heard patiently, for his object is the good of the reader, and not his own advantage; for he has sacrificed much for "the defence of the truth," and is now too old to be elated by success, however brilliant.

Before entering upon the main body of this work, it will be well to take a hasty view of parts of the human body usually referred to in reference to diseases, and of the classes of remedies commonly prescribed, so that the reader

may better understand what is meant when terms are used significant of these things.

DIVISIONS OF THE HUMAN BODY.

As there are certain divisions of the body which are often referred to in connection with the descriptions of diseases, it will be well at the outset to point them out, and give the names by which they are designated. The grand divisions are, the head, trunk, and extremities. The head is divided into the *head proper*, or all that part usually covered with hair, and the face, including the forehead, eyes, ears, nose, and the upper and lower jaws, or maxilla. The trunk is divided into the neck, chest or *thorax*, the abdomen, pelvis or basin, and the back-bone or *spinal column*, which is again divided into its *cervical* portion, forming the neck; *dorsal*, to which the ribs are joined; the *lumbar*, forming the small of the back; and the *sacrum* and *coccyx*, which terminate the column. The chest, or *thorax*, comprises all that part of the trunk included within the ribs and breast-bone, or *sternum*, and contains the heart and *lungs*, or lights. The abdomen is the space between the ribs and the bones of the pelvis, and contains principally the stomach, bowels, liver, pancreas, spleen, and urinary bladder; its divisions are—the *epigastrium*, or pit of the stomach; the right and left hypochondria, which are the spaces on each side of the epigastrium, or pit of the stomach; the umbilical region, or the middle portion, of which the navel forms the centre; on each side of which the space is called the *hypogastrium*. Below the right and left hypogastrium, and above the groin, the space is called the *iliac region*, and between those in front, and situated between the *umbilical* region and the pubes, or share bone, is the *pubic* region.

In order to fix these divisions of the abdomen in the memory of the reader, we will again refer to them in connection with the organs which are principally found in each. The stomach is found in the *epigastric* region, and hence its complaints are referred to this part. The end of the breast-bone forms about the centre of the epigastrium, for the *diaphragm* or midriff which divides the chest from the abdomen rises upward in the middle, and allows a part of the stomach and liver to lie above the line of the ribs. The liver is principally found in the right *hypochondrium*, but its thinner edge extends across the *epigastrium*, and frequently reaches the left *hypochondrium*. The great bowel, or colon, crosses from the right *hypogastrium* between the navel and the end of the breast-bone, and reaches the left *hypogastrium*, and then descends; this is called the arch of the colon. Hence, in wind colic the pain is commonly felt to commence in the right side, and extend across the belly to the left, where it descends, and, if the wind be expelled, for a time ceases; but it may return by a reverse motion in the bowel, and then the misery will be felt crossing from the left to the right side. The small intestines are mostly contained in the middle or umbilical region —the umbilicus, or navel, being the centre; hence, when they are the seat of suffering, it is felt mostly near this point. The spleen lies obliquely across the left side of the belly, extending from a little to the left of the end of the breast-bone, or centre of the epigastrium, downward, and toward the left groin; so that it principally is found in the left hypogastrium, and when much enlarged, as in the *ague cakes* in old cases of fever and ague, it often is felt extending from the breast-bone to the hip. The kidneys are seated one on each side of the lumbar vertebra, or bones of the small of the back, and are said to lie in the *lumbar region*.

The ovaries of the female lie in each *iliac region*, and hence, when the seat of irritation from cold or deranged menstruation, the uneasiness is felt a little above the groin. The bladder lies behind, and, when full, above the centre of the pubes or front bone, and is said to be in the *pubic region*. The basin, or pelvis, contains principally the womb in the unimpregnated state, the vagina, the bladder when empty, and the rectum, or lower gut.

The upper extremities are divided into the shoulder, the arm, extending from the shoulder to the elbow, the forearm, the wrist, and the hand. The lower extremities are divided into the hip, the thigh, the leg, the ankle, and the foot.

CLASSIFICATION OF MEDICINES.

Medicines are divided into *external* and *internal*. External remedies may either be general, as the hot and cold bath; or *topical*, when only applied to a particular part, as blisters, poultices, etc.

Topical remedies have received names which designate or point out the particular effect which is produced, as—

Rubefacients, or means which excite the skin, as the various stimulating liniments.

Epispastics, those which cause blistering.

Emollients, or applications which soften the skin and allay irritation, as mild poultices.

Discutients, or such as tend to discuss or drive away swellings or risings.

Refrigerants, or those which allay heat, etc.

Internal remedies have also been divided into classes, which have received names denoting the principal effect produced, or the particular organ on which they mostly act, as,

Emetics, or medicines which occasion vomiting.

Nauseants, such as produce a less degree of sickness than will produce vomiting.

Cathartics, or medicines which purge the bowels; and these are said to be *active* or *drastic* when they occasion very copious or profuse discharges; and *aperient* or *laxative* when the effect is mild and gentle.

Diuretics are such medicines as increase the flow of urine.

Emmenagogues are remedies which excite the menses or courses.

Diaphoretics, such means as promote increased secretion from the skin, as in sweating; and these are also called *sudorifics* when the action is very powerful.

Expectorants are such medicines as excite a discharge from the lungs and throat, by increasing the natural secretions of these parts.

Sialogogues are medicines which increase the flow of saliva or spittle.

Sternutatories, such as excite the secretions of the nose or nares.

Hydragogues are medicines which occasion an increased discharge of water or serum, as from the bowels or kidneys.

Cholagogues are medicines which produce a flow of bile, as the mercurials.

Anthelmintics are such means as expel worms.

Antacids are such as neutralize or destroy acids in the stomach or bowels.

Absorbents are such medicines as combine with and render inert acrid matters in the stomach and bowels, as chalk, charcoal, etc.

All these are more or less local in their effects upon certain organs or parts. There are other remedies which produce a general effect upon the whole system, as,

Astringents, or such medicines as cause an increased contraction of the tissues or fibres.

Tonics, or those which give strength or tone to the system.

Corroborants, which mean nearly the same thing as tonic, viz., strengthening, invigorating.

Antiseptics, or medicines which resist putrescency, or a tendency to gangrene or decomposition, as the acids, and most of the essential oils.

Stimulants, or such means as increase the activity or force of the circulation of the blood.

Nervous Stimulants are remedies which excite a more vigorous condition of the brain and nerves.

Narcotics are means which depress nervous influence, and destroy consciousness and sensibility, as opium, henbane, etc.

Sedatives or *Anodynes* are such remedies as relieve pain and allay nervous irritation without producing unconsciousness, such as assafœtida and hops.

Antispasmodics are nearly the same as sedatives, but the term is particularly applicable to such means as prevent spasm and soothe nervous irritation without occasioning stupor or any disposition to sleep, as musk, castor, etc.

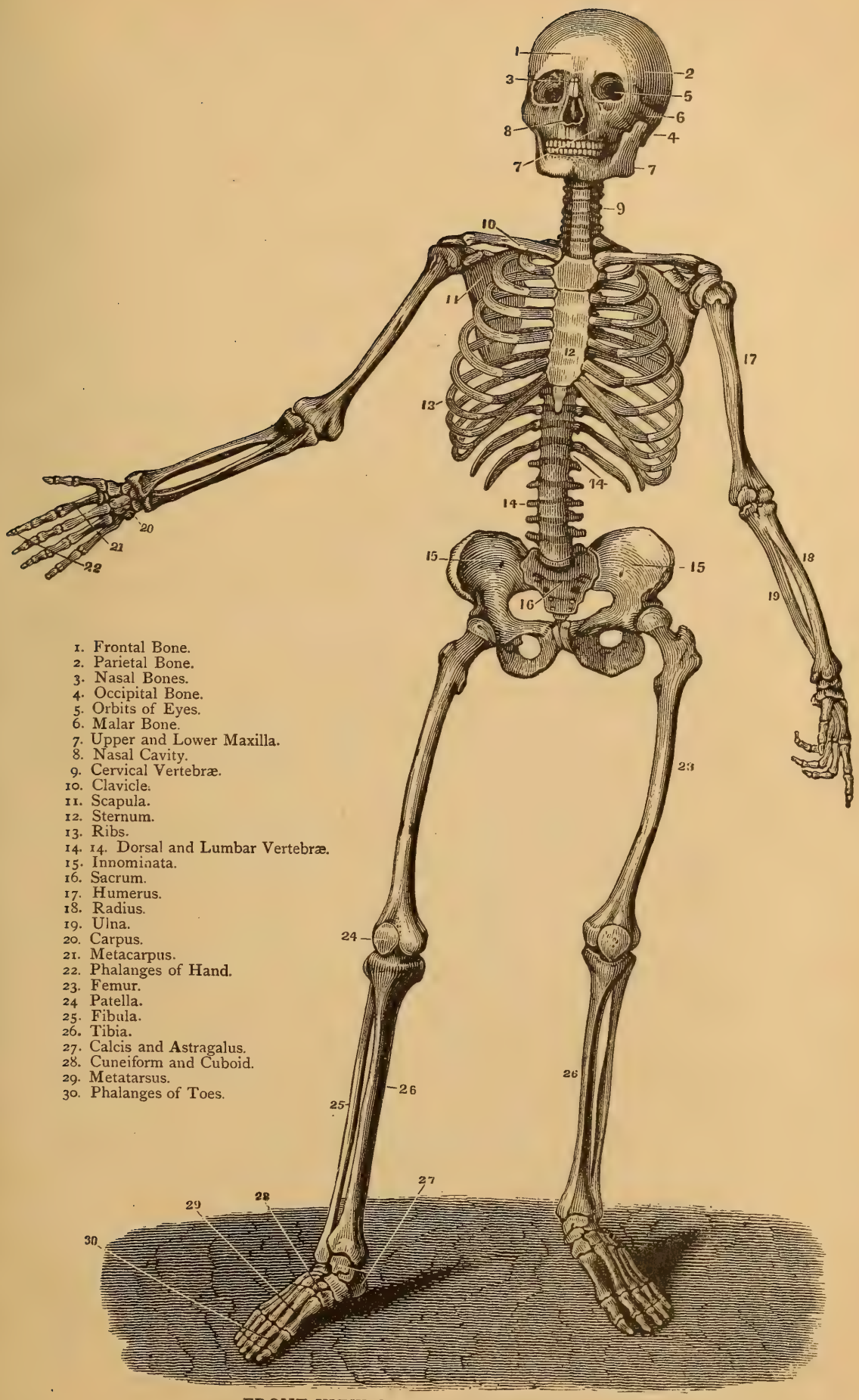
Anæsthetics, or such means as destroy sensation, as chloroform, ether, etc.

Alteratives, or such remedies as produce a gradual change in the condition of the system, as iodide of potassium.

Attenuants, such as occasion a thinness of the blood.

Disobstruents or *detergents*, such medicines as cleanse the system from impurities; and, lastly,

Alimentives or *dietetics*, or such means as nourish or build up the system, as food and drink.



1. Frontal Bone.
2. Parietal Bone.
3. Nasal Bones.
4. Occipital Bone.
5. Orbits of Eyes.
6. Malar Bone.
7. Upper and Lower Maxilla.
8. Nasal Cavity.
9. Cervical Vertebræ.
10. Clavicle.
11. Scapula.
12. Sternum.
13. Ribs.
14. 14. Dorsal and Lumbar Vertebræ.
15. Innominata.
16. Sacrum.
17. Humerus.
18. Radius.
19. Ulna.
20. Carpus.
21. Metacarpus.
22. Phalanges of Hand.
23. Femur.
24 Patella.
25. Fibula.
26. Tibia.
27. Calcis and Astragalus.
28. Cuneiform and Cuboid.
29. Metatarsus.
30. Phalanges of Toes.

FRONT VIEW OF THE ADULT SKELETON.

MEDICAL ADVISER.

FEVER.

CHAPTER I.

FEVER: ITS NATURE AND PHENOMENA.

Febrile diseases have, in every age and country, formed the principal outlet of human life. Sydenham estimated that in his day two-thirds of the human family died of fevers. At this time, I suppose the mortality from this cause is not so great; perhaps not more than one-half now die of fevers. But this is sufficient to give the subject paramount importance; and any plan which would materially lessen the mortality, we would reasonably suppose, would be seized on by every one who had a spark of philanthropy in his composition.

Suppose a plan were adopted which would stop this outlet to human existence: it would save in one year, in these United States alone, at least half a million of lives; a number greater than the entire population of America at the beginning of the last century. But a plan which would save half of this amount would in all fairness entitle the discoverer to be classed among the prominent benefactors of mankind. And this, yes, more than this, I profess to have discovered, and propose to explain. I will

not only speak of the means used, and present the evidence of their success, but trust that I shall be able to prove, by sound philosophical reasoning, that there is a *fitness* between the means and the end; and that the remedies *ought* to do exactly what I have proved by experience that they *will* perform. But whether this important discovery will be duly appreciated, is yet to be ascertained.

I am aware that we are all slow to acknowledge any thing to be great which is the work of a contemporary, and especially of a fellow-citizen and an equal: it requires the charm of distance, of time or space, to throw around any great discovery that prestige which commends it to our acceptance.

In order to a correct understanding of any derangement in complicated machinery, it is essentially necessary to possess a thorough knowledge of its construction, and the philosophy of its operations. With regard to the mechanism of the human system, and the manner of its natural movements, I must refer the reader to systematic works on anatomy and physiology; I can only here give a general summing up of a few of the most important points.

For example, we have the osseous [bony] system, forming the framework; the fibro-cartilaginous system, to invest the bones and tie them together; the muscular, whose office it is to act upon the bones and other parts, and put them in motion; the glandular system, to prepare material for ingress and excretion; the circulatory, by which material for reparation is carried to every part, and the worn-out particles conveyed from every part; the cerebrum, [upper brain,] where thoughts are manufactured and sensations recognized; the organs of sense, which serve to put this thinking apparatus into connection with the world; the cerebellum [lower brain] and its spinal prolongation, where motive and other powers are generated for propelling all this complicated machinery; the nerves, which serve as electric wires to transmit intelligence or influence to the great mental or sentient emporiums, and return the proper responses; then we have the cuticular [skinny] system, which forms a covering for the whole, and a lining for all

the hollow viscera which have an external opening; and, lastly, we have the cellular system, which serves the important purpose of connecting all the other parts together, of filling up irregularities and unoccupied spaces, and giving to the whole the proper form and pleasing contour which is presented by a well-developed human body.

Now, in order that we may have a perfect manifestation of the phenomena of life, all these parts must be fully developed, and in a healthy condition, and each perform its function well. It is evident that if any part be preternaturally developed, or act with unwonted power, a loss of harmony must be the consequence, and the whole machinery be caused to work imperfectly or unnaturally. If all should work with *increased* power, we would certainly have a high development of the phenomena of life; and if all should act with *diminished* energy, we would have a weaker development of life; but so long as there remained harmony of action between the various parts, in neither case would we have *disease*. I wish to impress this particularly upon your attention, for some important inferences will be drawn from it. I therefore reiterate, that neither increased nor diminished action constitutes disease, so long as there is harmony maintained between the various organs. Example: take a young man whose system is fully developed; place him under the influence of the various excitants addressed to each organ and sense; let his stomach be stimulated by the most savory food and exhilarating viands; his hearing enraptured by exciting music; his smell regaled by the most delicious odors; his eyes wander over a galaxy of captivating beauty; his touch vibrate to the magic influence of contact with the embodiment of female loveliness; his muscles strung to their highest tone by the whirling dance; his sexual orgasm thrilled by the uncovered developments of feminine charms; his intellect excited to its highest capacity by sallies of wit, sentiment and humor from his bewitching partner. Look at him! His eye flashes light; intelligence and zest of enjoyment beam from every feature; his whole form is full from centripetal action; his step is as elastic as the steel bow; his

heart beats vigorously, and sends the red current coursing through the minutest vessels. Is he sick? He never could feel better. But will not disease ensue from this state of excitement as a consequence? It may, or it may not. If his stamina is good, if his organs are well balanced, this state of high excitement may be indulged in a thousand times with impunity; but if there should be some weak point, some imperfectly developed organ, it may suffer under the pressure, become exhausted by the excessive tension, and afterward be incapable of performing well its part; disturbance in the play of the machinery of life be the consequence, and disease be set up, more or less dangerous in proportion to the importance of the suffering organ to the continuance of life. By this disturbance in the play of the vital forces, resulting from the broken harmony among the organs, some are thrown into increased action, but others are debilitated. There is never general increased action; for then would there be harmony in the working of the machinery, and a high state of life would follow, and not disease. But it is philosophically certain that no one organ can act with unusual power for a considerable length of time without exhausting its energies, and occasioning subsequent debility in itself; and also, by breaking up the harmony, and calling upon the general supply for more blood and more vital influence than are allotted to it, either the whole system must feel the shock, or, what is more common, some other organ, from accidental or constitutional weakness, will suffer in particular. I grant that increased action in any one part does not, in itself, constitute disease; it is only when over-action has produced debility in itself, or some other important part, that disease may be said to commence. This, then, narrows down the matter to a single point, that disease consists in *debility* in one or more organs, and that there can be no disease without debility; and that this debility must of necessity be partial. A general feebleness does no more constitute disease than general power. The machinery may be quite fragile; have but little momentum; afford but feeble resistance; but as long as there is correspondence among all its

parts, there will be harmony of its movements. So of the human system: so long as the various organs work in harmony, so long there can be no disease. The individual, though capable of little mental effort, of trifling muscular exertion, having weak perceptions, and small manifestations of desire or passion, yet has a feeling of well-being; has neither pain, nor sickness, nor fever, nor any other manifestation of disease; and this will continue to be the case, though the powers of life should continue to become more and more feeble, until the machinery stops its motion. We would then have a case of natural death, but not a case of disease.

This view of the nature of disease in general forms the key by which I propose to unlock the mystery of the febrile movement in all its forms, and it is upon the theory based upon this platform that I have built a mode of practice which has succeeded in my hands, and in the hands of many others, in divesting this formidable family of maladies of nearly all its terrors. But I am not content with knowing that I can *abort* all the forms of fever common in our country. I wish to know *how* the thing is done, and to be able to point out a philosophical adaptation of the means to the end. I beg indulgence, therefore, for being a little tedious in the defence and illustration of the first principles upon which my plan is founded, and I hope the reader will ponder them carefully.

I repeat, that all disease is dependent on, and has its very existence in, debility; general disease arising from debility in some general tissue or system of organs; local disease, from debility in one or more of the structures of which the part affected is composed. For illustration, I will refer to a familiar example, viz., local inflammation of the cellular tissue. From observations made under the inspection of the microscope, the following phenomena have been observed to follow the application of stimuli or irritants to any part suitable for observation—increased action of the capillary vessels, and increased momentum of the blood; and if the irritation be now removed, the parts soon return to their natural condition, showing clearly that disease or disordered

action does not necessarily follow increased action. But if the stimulation be continued, the capillaries soon have their vitality so much exhausted that they fail to respond to it, but, on the contrary, dilate mechanically to the expansive force of the blood, admitting a much larger amount than usual, which flows on slowly and sluggishly; and if the stimulation be now increased, instead of quickening the action of the vessels, they become entirely torpid from exhaustion, and the blood stagnates and presents the well-known phenomena of gangrene. Carpenter says: "If whilst we watch the movements of blood in a companion artery and vein, we draw the point of a fine needle across them three or four times, without apparently injuring them or the membrane over them, they will both presently contract and close; then, after remaining for a few minutes in a contracted state, they will begin again to dilate, and will gradually increase in diameter until they acquire a larger size than before the stimulus was applied. When in this condition, they will not again contract on the same stimulus as before; the needle may now be drawn across them much oftener and more forcibly, but no contraction ensues, or only a trivial one, which is quickly followed by dilation: with a stronger stimulus, however, such as that of great heat, they will again contract and close, and such contraction may continue more than a day before the vessels open and permit the blood to flow through them." We see, then, that notwithstanding the pain, soreness, swelling, throbbing, all seem to indicate *over-action* in inflammation, it is nevertheless essentially a disease of *debility;* and all these concomitants can easily be accounted for consistently with that fact; more than that, they all grow out of it, are produced by it. The redness is the consequence of the accumulation of blood, which we have seen is occasioned by the debility of the vessels, causing them to yield to the pressure of the blood. This engorgement produces the swelling; it also causes the pains; for the nerves in the coats of the vessels are necessarily stretched by the enlargement, and those in the intermediate cellular tissue are necessarily compressed, and of course pain and soreness are the consequence. The engorge-

ment also occasions the throbbing; for the blood, not finding a vent through the capillaries, is accumulated in the small arteries, and a concussion more or less powerful in proportion to the heart's action is felt during every pulsation. The obstruction also causes the heat: any of you can at once prove to yourselves that a simple obstruction to the circulation of the blood causes heat, by drawing a ligature around any of your extremities, so as to obstruct the return of the blood.

The *rationale* of the curative means most relied on for subduing inflammation, also goes to establish this view of its nature:

1. Equable pressure obtained by the roller bandage, by which the quantum of blood flowing to the part is lessened, and the coats of the vessels supported, and thus enabled to reäct and assume their former size.

2. The application of cold and other astringents, which produce the same effect in a different mode.

3. Stimulation, by which the vitality of the capillaries is aroused, and they made to contract upon their contents.

A stimulus of a different kind from that which produced the debility, or even a milder application of the same kind, will often prevent an inflammation, or speedily arrest it when set up. Example, a frozen extremity: the application of ice-water will often restore the suspended animation; and it is well known that a degree of heat a little less than produced a burn will "draw out the fire," in common parlance; that is, it prevents the inflammation which would otherwise follow. Spirits of turpentine, camphor, and other stimulants, act upon the same principle. We all know the efficacy of cayenne pepper in subduing inflammation of the throat; of creosote, oil of cloves, etc., for allaying inflammation of a carious tooth; of strong alcoholic spirits for alleviating mercurial inflammation of the mouth, or for superficial erysipelas. But why multiply examples? The common sense of mankind has in all ages led them to cure inflammation by stimulation. But, says an objector, how will you account for the soothing effect of emollient poultices, upon this view of the subject? Very easily. The

tension of the parts causes the pain, and the irritation of the pain causes an increased flow of blood to the part; the poultice relaxes the skin and subjacent cellular tissue, enabling them to yield to the pressure of the engorged capillaries, thus taking off the pressure from the nerves which caused the pain; less blood flows to the part, as a consequence, and the inherent vitality of the capillaries, returning, enables them to resume their usual calibre and regain their natural action in circulating the blood.

Perhaps it would be well for me here to make a few observations upon what I mean by the *capillaries*, and their office. You no doubt have been already taught that they form the connecting link between the arteries and the veins; they also are the secretory vessels which separate the various materials intended for the use of the system, or for excretion from the system; they also separate from the blood the material for building up the system in its various parts; also separate the worn-out particles from the various tissues, and convey them into the veins or lymphatic vessels, to be forwarded to the appropriate organs of excretion. In short, the capillaries do every thing that is done in the way of building up or taking down the system.

But to return. Having shown that *inflammation* is essentially a disease of debility, it will be easily demonstrated that *fever* is also; for fever is, "to all intents and purposes," an incipient inflammation. Common observation indicates, and the microscope demonstrates, that the condition of the capillaries in fever, and the first stage of inflammation, is identically the same. We have but to observe the phenomena of a case of fever, and analyze the symptoms as they consecutively occur, to become assured that this, as well as inflammation, has its foundation in debility —begins in it, continues with it, and sinks under it, or ceases with its removal. Let us, for illustration, take a case of common symptomatic fever, and consider its cause, its inception, its development, and its cessation, and see if we cannot show up the footprints of debility throughout its entire march. A boy runs heedlessly over rocks, and bruises his heel; inflammation, and, of

course, swelling, ensue; but the hard integument will not yield, and the consequent pressure upon the nerves, with which the part is abundantly provided, causes intense suffering; and the cellular tissue, being here dense and fibrous, suppurates slowly, so that the case is protracted long enough for the painful impression carried by the nerves to their spinal origin to stimulate that organ so as to occasion debility in its structure; which, as in incipient inflammation, is attended with engorgement of the capillaries which enter into its composition, causing a retarded circulation of the blood through its vessels; the nervous matter is pressed by the distended vessels, and its energies cramped, so that it sends out deficient or morbid nervous influence, which is manifested as follows: The boy feels listless, weak, and mopish; complains of aching in the back and limbs, soreness of the flesh, and rigidity of the muscles, which make him averse to move; the organs of secretion work languidly and unnaturally; there are fitful sensations of heat and chilliness; his appetite is capricious, feeling hungry, but refusing food when presented; his heart beats languidly, or rapidly with a weak and variable motion; the congested capillaries give a duskiness to the surface; his eye is watery, weak, and lustreless, and his intellect clouded. But the blood, not finding a ready passage through the congested capillaries, necessarily accumulates in the large vessels; the heart is soon made to feel the stimulus of distension, and is excited to increased action; but though it labors with augmented force and frequency, and throws the vital fluid bounding to the surface, the engorged capillaries offer an obstruction, and it reäcts still further upon the heart. The patient now complains of heat, restlessness, headache, throbbing of the temples, dryness of the skin, mouth and throat, nausea, or sickness of the stomach; in short, of all the distresses usually attendant on a well-developed case of fever; every feeling, every sensation is unnatural; every function is deranged; every secretion is morbid.

Here let us pause a moment, and consider the real condition of our patient. Has he too much blood in his system? Not an ounce more than he had a few hours ago, when he

was laboring under the period of depression. Is his blood charged with some poisonous matter that is fretting the heart into this tumultuous action? It is the same blood that flowed tranquilly through his veins a few nights since, when he slept as quietly as an infant, and breathed so softly that a feather would not have quivered from its force; the same that, in his waking hours, gave buoyancy to his feelings, and filled him with the zest of young life's enjoyment. There is, then, not too much blood; neither is his blood poisoned; but it is obstructed in its circulation; and the proper method of relief is, not to lessen its quantity, nor to purge away part of its constituents, but to stimulate the capillaries, restore their vital activity, make them contract upon their contents, and thus remove the obstruction to the onward current of the blood; and the heart being relieved from the stimulus of distension, and the nervous matter from the stimulus of compression, all the over-action will quietly subside, all the morbid sensations will disappear, and the machinery of life run on smoothly again, without having sustained any loss of *power* by the means that have been used to set it right. But the first consideration in this case should be to remove the cause; for, while it is still operating, it will be very difficult to keep down the effects. Every one would agree that the abscess should be opened to relieve the tension, and poulticed to allay the irritation; and then, if the system had been previously healthy, it will perhaps return again by its own inherent powers to its former state of well-being. And, I presume, it will be conceded that it would be just as important to remove the cause in every other form of fever as in this, if it could be done; and I hope to be able to show that the cause of at least some other fevers can be as certainly and as speedily destroyed as the one we have considered.

But to progress with the matter immediately under consideration; that is, that all fevers are dependent on *debility*. The next most appropriate form of fever that presents itself for illustrating this position, is child-bed or puerperal fever. In this case the whole system has received a severe

shock: there has been exhausting muscular effort, severe and perhaps protracted suffering, and a considerable drain of the vital fluid—all calculated to produce general debility and irritability. An important organ has suffered a serious lesion, and its capillaries, by being debilitated, have become congested, which readily runs into the stage of actual inflammation. The already excited uterine nerves convey the morbid impression to their spinal origin, and there produce stimulation which is felt through the medium of the nerves throughout the entire system. And here, at the commencement of this disease, we have the opportunity of witnessing the very first febrile movement; I mean the excitement felt throughout the whole system from stimulation of the nervous centres. Who, that has had experience in puerperal fever, has not marked that, just before the onset of the disease, the lady felt unusually *well?* She enjoyed with a zest the society of her friends; dallied with her infant; took nourishment with a relish; and was buoyant under the confident anticipation of a speedy recovery. But important changes have been silently taking place: over-excitement in the nervous centres is producing debility, and the debility engorgement; the first manifestation of which, perhaps, is, that the lady complains of feeling tired, and falls asleep, from which she is aroused by regular rigors. The whole system now feels the shock; the head, back, and limbs ache; the heart beats laboriously; the lungs play with difficulty, and there is restlessness and sighing; but the blood soon accumulates in the great vessels, so as to excite the heart by the stimulus of distension to increased action, and the blood is sent with power to the periphera; but the weakened, torpid, congested capillaries do not transmit it freely, and hence soon follow heat, throbbing, pain, restlessness, and all the other concomitants of febrile excitement, complicated with inflammation of a most important and sensitive organ. All this is very unexpected to friends who were misled by the deceptive excitement of the first stage, and all are ready to give a reason. She was too *smart*, they say; sat up too much; talked too much to the baby; ate more than was proper,

etc., etc.; never imagining that all these were done under the excitement of the disease itself.

The common sense of the profession has led it to adopt a plan of treatment for this disease which corresponds very well with the views here expressed of its nature. The remedies mainly relied on now are blisters to the abdomen, and the internal use of opium and spirits of turpentine. Now opium, we know, is directly a powerful nervous stimulant, and indirectly an equally powerful *general* stimulant, and turpentine is directly a most potent stimulant, only a little less severe than fire itself, when applied to a sentient or raw surface, and, hence, is much used as an application to burns "to draw out the fire." It does act beneficially, and upon the same principle that heat does; that is, when a part is debilitated by the action of a powerful stimulus, one a little less powerful will keep up the action of the capillaries until they have time to regain their tone. The other leading agent referred to, viz., the blister, acts upon the very same principle: it stimulates the external capillaries immediately over the inflamed organ, which, by being intimately associated with those within, causes them to act also; just as we arrest an internal hemorrhage by dashing cold water upon the surface. There is, therefore, a fitness between these remedies and the object to be attained; and the practice is, consequently, reasonably successful. But there is a better means for producing stimulation, which I will give in full in the proper place.

The next disease which I will refer to, for illustration, is inflammatory fever; and I should suppose if I can clearly show *this* to be a disease of debility, you will find little difficulty in following me in the application of this term to all the rest of the febrile family.

A young man, unused to active exercise, concludes to amuse himself with a hunt, and, shouldering his heavy double-barrelled fire-arm, sallies forth on a sultry afternoon: he sees game, but it eludes him; yet, stimulated by the hope of ultimate success, he pursues on, forgetful of the unusual tax which he is imposing upon the vital forces; but, finally, his tired muscles complain so urgently, that he

is obliged to give heed; and now, yielding to the impulse, he throws himself upon the ground beneath the wide-spreading branches of a forest tree, and drops to sleep; on waking, he finds his limbs numb and stiff, and his muscles obey the will with difficulty; but by an effort he reaches home and retires to bed. In the night he awakes out of unquiet slumbers, and finds his tongue parched; his throat as dry as his powder-horn; his temples throbbing; back and limbs aching; general heat of the surface, restlessness, etc. Now let us analyze these symptoms, and refer each to its appropriate cause. The heat and unusual muscular exertion produced a real, general, temporary debility, which, if he had returned slowly home, and retired to his own comfortable couch, would have subsided of itself, without leaving any unpleasant consequences; but to the debility from exhaustion of vital energy, he superadded that arising from a protracted exposure to cold; for however powerfully a sudden application of cold may act as a stimulus, its protracted influence is, most certainly, a decided debilitant; and in this case, the whole sum of vital energy having been lessened by exhaustion, the capillaries were unable to retain their tonicity, and, giving way under the onward pressure of the blood, became engorged beyond their ability to make efficient contraction. Now, this engorgement is all that we need to enable us to understand the *why* of his soreness, stiffness, and listlessness on waking. The cause was a general one, acting upon the whole system; and the capillaries everywhere became debilitated and engorged, and everywhere produced an unnatural condition, which was manifested in each part according to its nature and office. The cerebrum is engorged, and, as a consequence, the intellect is dull and beclouded; the other nervous centres are engorged, and the supply of nervous influence is deficient and of a morbid quality, causing deficient or morbid action in every part; the capillaries of the nerve-matter, of its investitures, of the cellular tissue in which it is imbedded, the muscular fibres, are all engorged; and of course the nerve-matter everywhere is compressed and stretched, so that every contraction of a muscular fibre,

every change of position, causes suffering; and even when the body is kept motionless, this compression and tension of the neuramilla are sufficient to cause that indescribable sensation, known as "a sense of ill-being." But, say you, there is no controversy here: all agree that this stage of fever is one of debility, but we deny that the subsequent one, that of reäction, is.

Well, I will now proceed to examine it, and see if I cannot trace the marks of debility through it also.

I have already alluded several times to the manner in which the reäction—the hot stage of fever—is brought about; viz., that the blood, by meeting with difficulty in its passage through the capillaries, accumulates in the heart and arteries, and stimulates them to increased contraction: now if the capillaries did not *remain* debilitated and inactive, and thus continue to offer resistance to the momentum of the circulation, what prevents the heart from relieving itself from the stimulus of the accumulated blood? What prevents an immediate return of all the parts to a natural, quiet condition? In mild cases, this desirable result often does take place, in consequence of a reäction of the capillaries from their innate vigor, coinciding with the general reäction, or by the assistance of a timely exhibition of some of the domestic remedies, which the common sense of mankind, or rather of womankind, has led them to adopt, such as a warm ginger-stew, aided by the stimulus of a hot foot-bath, etc.

But suppose these timely remedies be neglected or prove inadequate: the symptoms go on increasing in inveteracy; the throbbing carotids drive the blood into the vessels of the brain with tremendous force, but the capillaries are torpid, congested, and do not transmit it freely; every available space is therefore crowded to the full, and the medullary substance [brain matter] so compressed that it cannot perform its functions well; the numerous nerves in its investing membrane are compressed, until they give out the sensation of pain, more or less intense; association between the faculties of the mind is lost, and the patient has wild vagaries and talks incoherently: a little more

pressure, and mental action ceases entirely, and the patient sinks into coma, and is dead to all thought or sensation.

Similar events have been taking place in other parts of the system; the capillaries of the stomach have been weakened and congested, and caused compression of the gastric nerves, which at first, perhaps, only gave the sensation of hunger, but which food would not satiate; an increased pressure will, however, cause them to complain in their usual way, viz.: by nausea, sickness, and perhaps vomiting. The same pressure upon the nerves of ordinary sensation, in the coats of the stomach, causes pain and soreness. The liver suffers in the same manner: at first, perhaps, the congestion only increases its natural secretion; a higher degree depraves it; and a still greater suspends all secretion, and distends its substance so as to present an evident fulness externally, with more or less soreness, pain, and sense of weight. All the other organs suffer in like manner, and complain in a way suited to the office and sensibility of each. The skin being exposed to the immediate inspection of the eye, we are enabled to examine its condition more readily and more accurately than any other organ. Now what are the developments presented? In the hot stage of fever, we see its vessels are evidently distended with blood, but it does not present the ruddy glow which we see follow active exercise in health; but it is dusky, like that presented by passing a ligature around a limb, so as to partially obstruct the return of the blood in the minute vessels.

But it may be objected that this view of the nature of inflammatory fever is not consistent with the known character of the agencies by which it is successfully treated; that these are blood-letting, active purgation, nauseants, etc., all of which are debilitants.

But an analysis of the *modus operandi* [manner of operating] of these remedies in this particular case will show that their success harmonizes well with this theory. We will take venesection as a type of the class: it will be conceded, I suppose, that there is no actual increase of the

quantum of blood over what was in the system immediately preceding the attack, or a few hours ago, when our patient was laboring under the period of depression; then there appeared to be an actual want of blood, judging from the pallid countenance and the shrunken surface; there cannot, therefore, be too much blood, but there is an obstruction to its circulation, and what is wanted is not a reduction of its quantity, but a removal of this obstruction, so that the heart may be able to relieve itself without exerting such unusual force. This can be effected in two ways. First, directly by stimulating the capillaries, and causing them to resume their usual action in passing the blood, which, finding a free passage, soon relieves the heart of the stimulus of distension, and it quiets down to its usual force of action; or, secondly, the same thing can be done *indirectly*, by the use of such means as will lessen the heart's action; for by lessening the force by which the blood is pressed into the capillaries, they are allowed time to regain their usual contractibility, and resume their function. This can be done by abstracting blood from a vein; the supply to the heart being reduced, it is enabled to relieve itself of the stimulus of distension, and of course acts with less power; or it may be done by acting upon the heart through the medium of the nerves: for example, nauseants and veratrum viride, by their depressing influence on the nervous centres, diminish innervation [nerve-power] generally; and less nervous influence being sent to the heart, and it made less sensitive to the stimulus of the blood, it will act with less force under the same amount of stimulation.

But venesection, nauseants, veratrum viride, drastic purgatives, and all that class of remedies, relieve the obstruction by producing positive general debility, and necessarily make convalescence protracted and uncertain; whereas, by the first mode, that is, by direct stimulation of the capillaries, relief is obtained without any loss of general strength, without any shock to the vital powers, and convalescence is consequently direct and complete. But I will dilate more upon this at the proper time.

I will now take a hasty view of miasmatic [bilious] fever, and see how well its symptoms harmonize with the general theory I have advanced.

But it will amount to little more than a tiresome repetition of much that has been said, to go into a detail of its symptoms, and an explanation of the condition out of which they arise. We have here the same evidence of nervous and capillary debility in the forming stage which has already been described, with this difference: the cause having acted a longer time in bringing about exhaustion of vital energy, the manifestations of debility and morbid nervous influence are greater, and the functional derangement in the various organs is also usually more decided, so that we have, along with the listlessness, languor, muscular weakness, etc., more headache, pain in the back and limbs, greater disturbance of the stomach, bowels, and liver, and a more decided sense of chilliness. But still it must be acknowledged that the symptoms of the first stage of all fevers, whether sympathetic, malarial, or contagious, are so nearly similar that the most experienced practitioner, when consulted at that period, is often wholly unable to determine what form it will assume when fully developed. And, fortunately, it is generally of the least possible consequence that he should determine, provided he have a clear comprehension of the condition of the system out of which the symptoms have grown: a hot mustard foot-bath, frictions along the spine, with some stimulating liniment, and a mild nervous stimulant, resorted to in this stage, will often so effectually arouse the capillaries, and quiet the morbid nervous excitement, that the physician is never able to learn what kind of a fever would have been developed, had the case been left unmolested.

But to return to the case: After this stage of depression has continued for some time, a reäction is brought about in the manner already described, and differs nothing from the reäction in inflammatory fever, except that it is usually not so perfect; for, owing to the very gradual way in which the stage of depression has been brought about, the debility is more profound, and the vital energies are, consequently, not

so readily aroused. In some cases the exhaustion of the vital energies is so complete, that the patient dies in the stage of depression; in others, it takes place very imperfectly, not amounting to more than a mere throbbing of the heart, with but trifling increase of force, the extremities still remaining cold. But in whatever degree reäction does take place, it is always attended with the symptoms of capillary obstruction and morbid innervation; showing that debility is a prominent feature of this stage also. Perhaps there is no one fact connected with this stage that points so conclusively to debility as constituting its most prominent character as this, that notwithstanding the *reäction*, there is no increase of *strength:* on the contrary, the more powerful the heart's action, the more utter is the feeling of prostration; unless, indeed, the brain becomes maddened by inflammatory action, causing frenzied demonstrations of power. After this state of excitement has continued for some hours, it begins to abate, and we have an intermission, or at least a remission, which appears to be brought about in the following manner: The heart, being nothing more than a great muscle, is subject to the laws governing muscles in general. One of these is, that when they are made to contract with more force than usual, they become tired, or have their vitality exhausted. Accordingly, the heart, after acting with unusual power for a few hours, becomes weary, and gradually assumes a more moderate action, under the same amount of stimulus; and besides, the capillaries reäct in some degree during the excitement, and, by passing the blood on, lessen the stimulation of the heart. But there is still another way in which a remission, or at least a subsidence of actual excitement, may be brought about. At the termination of each capillary, whether it communicates with a vein or an absorbent, or opens into an excretory duct, or performs a secretory office, or opens externally through the skin or into the bowels, there resides a peculiar sensibility which acts as a kind of sentinel over the passage of the contents, and refuses to allow any constituent of the blood to pass, except that which nature designed to pass. But in cases of great debility this guard leaves its post; in other words, the

sensibility becomes so deficient, that the mouths of the capillaries relax so as to suffer the more fluid parts of the blood to pass out unchanged and unchecked, and a wasting colliquative sweat or diarrhœa lessens the heart's action, and at the same time wastes the energies and resources of the system.

If the intermission be perfect, and the vital energies of the system not much exhausted, the system regains nearly its usual healthy condition, the sensations become more natural, and the secretions more or less restored, showing clearly that debility was the cause of both *inaction* and *reäction*. But the *cause* is still in operation, and the capillary inaction only partially removed; and, after a certain period, another paroxysm is set up in the same way as the first. Now, in case the debility in the capillaries is greater and more persistent, in place of a perfect *intermission* succeeding the reäction, there will only be a remission; and this will be more or less perfect, exactly in proportion to the degree in which the capillaries can be aroused by the stage of excitement.

Now, all will be ready to admit that the lowest cases, such as prove fatal in the first stage, and such as are attended with a feeble reäction, are characterized by debility. Well, according to the fair analysis which has been given of the various stages of fever, it is plain that these lowest cases are founded in the very same morbid changes which gave rise to the slighter and most open forms; the only difference being the greater intensity of the debility occasioned by a more powerful action of the remote cause, or from its acting for a longer time, or on a system debilitated by some other cause.

I will now hastily sum up what I think have been proved to be the essential circumstances connected with, and constituting, a case of fever. 1st. Morbid impressions made upon the nervous centres. 2d. Weakened and vicious nervous influence sent out through the whole system. 3d. That this weakens the action of the capillaries, and causes them to dilate under the pressure of the blood, while, at the same time, the sensibility of their mouths is so altered,

by having been supplied by morbid nervous influence, that they refuse to let the blood pass; just as the neck of the bladder, when irritated, refuses to give passage to the urine, though of a natural quality, thereby retarding the blood in the capillaries, and obstructing the circulation. 4th. That the accumulation of blood in the large vessels, from this cause, occasions the heart and arteries to be unduly excited by the stimulus of distension, thus producing the reäction which constitutes the hot stage. 5th. The pressure and tension occasioned by the engorgement of the capillaries, give rise to all the unnatural phenomena which attend a case of fever throughout its several stages, viz., the increased, depraved, or suspended secretions, painful and unnatural sensations, inflammatory complications, etc. 6th. It is only by a partial restoration of the natural action of the capillaries that an intermission, or remission, is obtained; and only by permanently restoring this action can the disease be broken up. And, lastly, if capillary action is not restored, the patient dies.

CHAPTER II.

CAUSES OF FEVER.

We now have but one more point to examine, and we will then have a plain, practical, common-sense view of the whole subject; that is, the original cause, the agency by which the deleterious impression is made upon the nervous centres. In symptomatic fever, we know that the remote cause is morbid impression sent by a suffering organ to the brain and its appendages. The remote cause of inflammatory fever is known to be the depressing influence of a protracted exposure to cold upon a system exhausted by fatigue; but the remote cause of other idiopathic fevers is not so well understood, but it is certain that it must be something that is capable of floating in the atmosphere, and that it is either organic or inorganic, and that it either acts upon the nerves of the sentient surfaces, as the skin and alimentary canal, or it enters the circulation and acts immediately on the nervous centres. Now, it does not appear to be reasonable to suppose that it acts primarily upon the surfaces; for then those parts should *first* show signs of disease before they could send morbid impressions to the nervous centres, so as to bring about the debility which characterizes the first stage of all fevers. But we know that there is no previous manifestation of irritation in these surfaces; then the cause must enter the circulation, either through the lungs or along with the ingesta, [food,] and reach the nervous centres through the blood, and, when there, act either as a mechanical irritant or a narcotic stimulant. My views of the whole subject are briefly as follows: That the cause of all malarious epidemic

and contagious fevers is organized existences—infinitesimal animalcules or sporules which float in the atmosphere, and are inhaled with it into the lungs, and, permeating the lining of the air-vesicles, enter the blood, and by it are carried to the nervous centres, where they act as narcotic poisons.

This view of the subject will enable us to explain many of the facts connected with the spread of febrile diseases, which no other theory can. It also enables me to give a rational explanation of the mode in which one of the remedies which enter into my plan of treatment operates in arresting fevers, which I otherwise cannot explain. But whether organic or inorganic, it most certainly acts as a narcotic stimulant, or nerve poison: the nature of the first symptoms indicates this most unmistakably.

Fordyce says: "One of the symptoms of fever is diminution of the sensibility of the skin; of this, one great instance is its insensibility to heat, which has been so great in some instances that no sensation has been impressed on the mind when hot bodies have been applied so as to coagulate the scarf skin. This insensibility to heat is not from the sensation of coldness, for it extends to the sensibility of the skin of every kind; it is a degree of what is called numbness, or indistinctness of the ideas which are obtained by the feel of the figure of bodies, their smoothness or roughness, their hardness or softness, etc. It is extended to other means that give pain, as stimulating applications, the pricking of sharp instruments, etc. The degree of this numbness or want of sensibility of the skin takes place in various degrees, but exists in almost every case of fever." He also describes as common, "a sense of weight, fulness and uneasiness about the breast and pit of the stomach, similar to what is produced by fear, grief, and other depressing passions."

Persons sometimes die in the first stage of fevers, and the symptoms show that the cause of death was purely a powerful nervous impression. Fordyce says: "When the first attack is fatal, it sometimes kills in less than five minutes; sometimes it requires half an hour, seldom a longer

time. While the patient is yet sensible, violent headache with great sense of chilliness takes place; the extremities become very cold and perfectly insensible; there is great prostration of strength, he becomes pale, his skin is of a dirty brown, and he is soon insensible to surrounding objects," etc. He adds, that "when in any paroxysm of fever rigor and horror take place, the patient is never carried off by that paroxysm." The reason of this is obvious: these rigors are evidence that the nerves are not totally overwhelmed. When reäction takes place in the nervous system, there is great exaltation of sensibility; hence the patient complains greatly of heat, although the actual heat of the body may not be greater than in health, or even much less. Fordyce says upon this subject: "The heat over the whole body seems intense to the patient; yet, upon the application of the thermometer, it is found even less than it was when the patient felt himself cold." This exaltation of the sensibility also accounts for the extreme restlessness experienced by patients in this stage. The reäction of the heart sends the blood with force to the capillaries, but they, being debilitated, do not transmit it freely, and become distended so as to press upon the interstitial nerves, whose sensibility is now greatly augmented, giving that indescribable sense of suffering and restlessness all have experienced who have endured the hot stage of a paroxysm of fever, producing a sense of "prolongation of time," so that a minute will appear an hour, and an hour an age. Fordyce further says: "It happens often, at the beginning of an attack of fever, that the patient has a sensation as of some light body moving over the hairs that arise from the skin, as if, for instance, a number of little insects were walking the points of these small hairs." The above is exceedingly suggestive of the nature of the cause of fever, for what but a narcotic could produce this peculiar sensation? All who have taken opium will recognize this description as answering admirably for the sensations occasioned by that drug, the impression of insects running over the surface being often very distinct and very annoy-

ing after being narcotized to a certain extent, or fully impressed by alcoholic potations.

That the cause of fever, be it what it may, acts primarily upon the brain and appendages, has been fully acknowledged by the best authorities. Dr. Smith says: "The immediate cause of fever is a poison which operates primarily and specifically upon the brain and the spinal cord. The diseased state into which these organs are brought by the operation of this poison, deprives them of the power of communicating to the system that supply of stimulus (nervous and sensorial influence) which is required to maintain the functions of the economy in the state of health." A superabundance of authority could be arrayed in support of the position that the impression is first made upon the brain and nerves, but no one appears to have been led to perceive that this impression was that of narcotism; but still, without having this idea before the mind, authors, as above, in describing the manifestations of the operation of this poison, have unknowingly traced out a good description of the effects of narcotic stimulation. This point being settled, the field of investigation is at once open for means to neutralize the poison or counteract its effects.

CHAPTER III.

TREATMENT OF FEVER.

I HAVE now dwelt long enough upon the cause of fever, its nature and phenomena, and have doubtless convinced all whom I shall be able to convince, that the theory I have offered is the true theory. I will, therefore, leave this part of the subject, and proceed to give the plan of treatment which has grown out of these views, and which in my hands has proved successful beyond any parallel of which I am informed.

According to the foregoing views, there are four points to be met in the treatment of every case of fever:

1. To remove the cause.
2. To allay the nervous disturbance.
3. To restore the action of the capillaries.
4. To allay over-action and equalize the circulation.

And first: to remove or neutralize the remote cause. In symptomatic fever, it is obvious that our first efforts should be directed to the removal of the local irritation which has given rise to it. If it be from a protruding tooth, we should remove the tension of the investing membrane by dividing it. If worms in the alimentary canal, expel them. If local inflammation, use such means as will assuage it, etc., etc. The same thing should be done in idiopathic fevers—that is, those which are produced by the direct action of the remote cause upon the nervous centres; for as long as the cause is still acting, it will still keep up the effect. But how is this to be done? It had never been attempted, so far as I am informed, until I attempted it.

Having come to the conclusion that the cause of all idio-

pathic fevers is a something possessing the property of a narcotic poison, I believed that the oil of sassafras would destroy or counteract, or neutralize it. I had tried it for these purposes a thousand times, successfully, in other analogous cases. For example: I had tried it repeatedly for destroying insect life, and found it immediately fatal to every kind; had also tested its powers upon the infusoria in impure water, and saw it destroy them instantly. I therefore felt assured that if the cause was really the presence of minute animalcules disturbing the nervous centres, this would be conveyed by the circulation in sufficient strength to destroy them at once. I also knew that it would as certainly destroy or neutralize any poison which they might have infused into the system, for I had tested its power fully in destroying the poison of insects and reptiles, such as mosquitoes, fleas, spiders, bees, wasps, etc.; and, on one occasion, had an opportunity of testing its powers over the venom of the snake known as the copperhead, and found it to succeed promptly. I also knew, from repeated experiments, that it would destroy or prevent the effects of vegetable narcotics, such as tobacco, henbane, etc.; I therefore judged that, should I be mistaken in the cause of fevers being animalcules, it must of course, then, be a poisonous gas; and believing, from observing its effects, that it must be of the narcotic kind, I had good reason to infer that the oil of sassafras would succeed, should this be the case. I therefore expected it would meet the first indication, and was not disappointed. I have seen its exhibition followed, again and again, with as sudden a disappearance of the febrile movement as I ever saw follow the opening of an abscess, when the fever originated from that cause.

The second indication, to allay the disturbance in the nervous system, I believed could be best met by the use of valerian, it having the property of quieting the nerves, easing pain, and procuring rest, without any of the unpleasant effects of opium, and most other narcotic stimulants, upon the brain; having, too, no tendency to suspend the secretions, as they have, but, on the contrary, being a very

good diuretic, a valuable consideration in selecting remedies for fever, the urine always being scanty and depraved.

The third indication, that of restoring the action of the capillaries, I believed could be met more effectually and pleasantly by the use of piperin than by any other known agency. I had often used it as an adjunct to quinine, in intermittents, and discovered that it not only produced a fine capillary action in the surface, but it evidently aroused the capillaries everywhere, as all the suspended functions were usually restored without the aid of any other means. I liked it because, although it produced a fine action on the surface, it rarely excited perspiration; on the contrary, checked it when present, if of the passive kind. It is also recommended by the fact that it is borne well by the stomach, and has a good effect in quieting the nausea, so often distressing to the patient in fever. Its cousin, cayenne pepper, is of too fiery a nature to be borne well by the stomach, or readily imbibed by the absorbents; the piperin has, in my hands, answered the purpose so finely, that I have had no reason to desire a better remedy.

The fourth indication, that of quieting the heart's action, and equalizing the circulation, is in a great measure met by the means already enumerated; for by removing or neutralizing the cause, quieting the nerves, and exciting the capillaries, the condition of things is removed which gave rise to the disturbance, and it, as an effect, consequently subsides. Still there are many other minor means which may be appropriately called into requisition to aid the former and facilitate their action, such as sponging the surface with water of a temperature suited to the degree of general or local heat. For example, when the head and trunk are hot, and the extremities cold, apply cold water to the first, and hot water to the latter; and when there is restlessness rather from nervous excitement than over-action, tepid water will answer the best. The bowels should also be kept moderately loose, so as to remove the debris, which is constantly accumulating in every case of fever. For this purpose I choose rhubarb, on account of its certainty of action, while it rarely acts too much, and, also, because it

operates without producing debility, but, on the contrary, is tonic and bracing in its effects. A considerable source of irritation in fevers is an accumulation of sour phlegm in the stomach and bowels, to remove which I choose sup. carb. of soda. I also found much advantage from friction along the spine with some kind of liniment containing both stimulant and anodyne properties; of course, many adjuvants have been resorted to, from time to time, to meet particular symptoms; but the above forms a general catalogue of the means by which I attempted to subdue the most potent enemy that has ever assailed our race, and with them I have succeeded, not occasionally, not generally, but uniformly and promptly. These means, though simple, as regards any unpleasant effects they can have upon the system, have proved as powerful in the contest with disease, as did the pebble which David used in his hostile meeting with the uncircumcised defier of Israel.

For the sake of convenience, and to obtain an eligible form in which to administer the remedies, I formed them into a syrup after the following formula: Take half a pound of common rhubarb-root, and after breaking it coarsely, add half a gallon of water; place it over a slow fire, and keep it near the boiling-point for three hours, then strain; there will now be about a quart; to this add five pounds of loaf-sugar, and set it on the fire until it simmers; to this, after it has cooled a little, add half an ounce of oil of sassafras, one and a half drachms of piperin, and two ounces of sup. carb. soda, first having rubbed them well together in a mortar, with a few ounces of water; stir the whole together well, and then add one pint of saturated tincture of valerian.

There are two things to be particularly remembered and observed in making this compound: the sugar must be the crystallized white sugar; if the common brown sugar be substituted, and the proportions used that I have directed, it will form a candy rather than a syrup. I have heard of some having made this exchange, and of charging me with giving a formula that was unpharmaceutical, they not knowing, I suppose, that crystallized white sugar, contain-

ing so much more water of crystallization than the brown, requires a smaller amount of water to give it fluidity.

When I make a prescription to be filled at a drug-store, I make it as follows:

Syrup Rhubarb, ℥ iv.; Tinct. Valerian, ℥ ij.; Oil Sassafras, drops, xx.; Piperin, gr. x.; Sup. Carb. Soda, gr. xx. Mix.

The other point to be observed is, that the piperin and oil of sassafras must be intimately mixed with the syrup before the tincture of valerian is added; otherwise the compound will be so pungent that it cannot be swallowed: after having been well combined with the syrup, the alcohol in the tincture does not unite with them so as to produce this pungency. I formerly used the infusion of valerian in order to avoid the pungency, but water does not extract the full strength of that article, and having fallen upon the above method of avoiding the difficulty, I now use the tincture in preference. Those who have seen recipes for making this compound which differ from this, will recollect this change, and also, that in this formula there is less piperin and oil of sassafras, it having been ascertained that less of these articles would produce the effect desired.

In the course of the foregoing observations, I referred to the advantage of rubbing the spine with stimulating liniments for the purpose of relieving irritation of the spinal marrow. Much of the suffering experienced in fever arises from this cause; the back itself not only complaining, but pains and distress of various kinds are felt in different parts, which have their origin in spinal irritation, and can be relieved in a few minutes by the right kind of local application to the spinal column. I have used various compounds for this purpose, such as camphor and turpentine, volatile liniment, etc., but by far the best that I have ever tried, not only for this purpose, but also for pain or aching of the head, distress of the stomach, or in fact any other distress of whatever kind or wherever seated, so it be of nervous origin, is the following:

Sp. Nit. Dulc., ℥ iv.; Aqua Ammonia, ℥ i.; Oil Juniper, ℥ ½; Oil Sassafras, ℥ ½; Gum Camphor, ℥ ½; Chloroform, ℥ i.: when the Chloroform is not at hand, Sul. Ether answers pretty well.

But although I give the above syrup in every case of fever I am called upon to treat, and in many cases give nothing else and do nothing else, yet, as I have before intimated, I do not always rely on it exclusively, but, in bad or obstinate cases, call into requisition every other means which I think will aid it in meeting the indications I have pointed out. For example: In intermittents I often give a dose of some strong nervous stimulant to aid the syrup to break up the chill; quinine or some preparation of opium is preferred. After the chill is prevented, and the periodicity of the disease by this means destroyed, I depend upon the syrup alone to restore the system, and prevent a return. If there is so much torpor of the liver that the syrup, aided by a mustard-plaster to the right side, does not arouse it, I give a blue-mass pill every three or four hours, until I obtain a bilious discharge, still continuing the syrup to aid it, so that the effect may be obtained without mercurializing the system; and if there should be deep congestion in any part, or actual inflammation, I apply a fly-blister, and let it stay until its full effect is obtained; then have it dressed with an emollient poultice, without breaking the cuticle more than is necessary to afford an escape to the serum, the object of drawing the blister being to obtain a powerful stimulation of the capillaries during the process of drawing, and not to set up a drain. I therefore endeavor to get rid of it as soon as possible, and for this purpose apply soothing applications, in order to hasten the formation of a new cuticle, which, under proper management, is generally obtained in forty-eight hours. An irritable blister I dread as I do a salivation: both add to the debility by increasing the irritability of the system, and thereby retard the recovery. But it is not only a dread of salivation that causes me to be chary of the use of mercurials in fever; I am equally fearful of their irritating effect upon the stomach and bowels, when there is any tendency to inflammation in these organs, or even considerable irritation.

Consequently, I resort to mercurials only when the case is urgent; and it would be surprising to those who have been in the habit of looking upon them as the only means

of stimulating the liver, so as to incite the secretion of bile, to find how much they have been mistaken. It is very seldom indeed that the simple means which I have laid down for stimulating the capillaries in general, fail to also excite those of the liver, sufficiently to cause it to secrete bile of a good quality and in sufficient quantity. But I do not, as I once did, expect to see my fever patients improve, as a matter of course, because I have obtained consistent bilious discharges, or that they must of necessity die if such are not obtained. On the contrary, I merely look upon the liver as *one* of the many organs whose office is essential to health. Persons may *live* many months without any secretion of bile. In fever, all the secretions are deranged or deficient, and health cannot be regained until all are restored to a natural condition; but I do not look upon the restoration of the biliary secretion as of such paramount importance as to warrant me in being in a feverish hurry to accomplish it, for, as I have said, by exercising a little patience, I usually find the liver and all the secretory organs return to the performance of their appropriate functions under the influence of the prescribed general treatment for restoring the action of the capillaries in general.

I have yet said nothing about bleeding as a collateral aid; I seldom bleed, yet there do cases occasionally arise which imperatively demand it. In cases complicated with active local inflammation, in which general inflammatory action is considerable, there is sometimes so much contraction of the mouths of the capillaries, that it becomes absolutely necessary to relax them by bleeding or nauseants, or both, before a proper capillary circulation can be set up. Pleuritic fever and pleuro-pneumonia of a high inflammatory grade present good examples of such cases; here the heart's action must be first partly controlled, and the spasm of the capillaries relaxed, before the syrup can act efficiently in bringing about a healthy action of these vessels. It is true that in such cases the convalescence cannot be so speedy as though no debilitants had to be used; but if they are pushed no farther than is actually necessary to relieve the spasm, and the means then used to act directly on the

capillaries, there will only be a few days' difference in the time of recovery.

The remarks which have been made apply to fever as a class, and are consequently applicable to all its forms; it may be expected, therefore, that I now proceed to treat of each form particularly; but the view I have given of the unity of the febrile movements almost renders this unnecessary; my theory embracing the conclusion that all the forms of fever consist in similar derangements of the same parts and organs, differing only in the extent or intensity of that derangement, and a tendency to affect more injuriously particular organs, occasioned, I suppose, by the remote cause acting with the greatest force upon the particular part of the brain, or other nervous centre, from which the nerves supplying that part originate, or from the accidental coöperation of some other remote cause, acting at the same time upon a particular organ, as cold upon the surface, worms in the bowels, a determination of blood to the head from a debauch, disturbance of the alimentary canal from improper ingesta, etc.; which, by weakening the vital energies of a particular part, will cause the debility occasioned by the remote cause of the fever to be more profound in that organ than in other parts, and disqualify its capillaries from reäcting with the same facility; and hence, when a remission occurs, this organ does not recover its functional movements as perfectly as the rest, which circumstance has often led the observer to look upon the fever as originating there, and as being a disease essentially of that particular organ. But notwithstanding these differences and complications, all fevers consist essentially of the same derangements in the same parts; and it follows, as a consequence, that the same mode of treatment is equally applicable to all, only requiring such other means to be occasionally called into use as may become necessary to meet these accidental differences. This view of the subject, you will perceive, cuts off the necessity of going into a detail of the treatment of particular fevers. It also saves the practitioner the necessity of making nice discriminations at the bedside as to the particular *name* of the

fever he may have to contend with—a discrimination which the most astute and experienced are often unable to make. The only call for the exercise of judgment, upon my plan, is to decide upon the amount of stimulation that may be required in any given case, in order to arouse the dormant capillaries, and to call into use such means as may be necessary to meet accidental complications. And if there should be any doubt as to the amount of stimulation required, we have only to watch the effect of the medicine, and increase or diminish the dose, according to the effect produced.

But, says one, I thought you would at least go into a detail of your method of managing typhoid fever, as that is the disease which I heard your plan was particularly successful in breaking up. This is a mistake: it arrests and breaks up all the other forms of fever common in this country, with the same promptness that it does the typhoid; and the only reason why particular attention has been drawn to this more than others, is that they are usually successfully managed upon other plans, and this is not—at least, not aborted, broken up, and cut short in its progress. So firmly has the idea taken hold of the medical mind that typhoid fever is a *self-limited disease*, having a determinate course to run, which it will run, in spite of all efforts to the contrary, if the patient should live so long, that a contrary idea is looked upon as heterodox, and the expression of an opinion that it can be arrested is taken as evidence of ignorance, or of a wild imagination. All of this I knew, and had counted the cost of, before making the announcement that I claim to be able to do this thing; which odium I have realized in some measure, but a host of noble spirits came to the rescue, and now it is folly to assert that typhoid fever cannot be *aborted*. But notwithstanding that the general principles which have been laid down naturally point out the proper treatment in every fever, yet I will presently take up each kind, and give specific directions for meeting every variation.

CHAPTER IV.

THEORIES OF FEVER.

HUMORAL THEORY.

The symptoms of nervous disturbance, and of capillary debility and congestion, attracted the attention of the very earliest cultivators of medical knowledge; but at that time very little was known of the office of the nerves—most of the phenomena connected with innervation, whether natural or morbid, were then referred to the workings of an imaginary intelligent presiding genius, called vital principle, or *vis medicatrix natura*, which, they supposed, watched over and regulated the operations of the system in health, and made efforts to restore order again when any thing went wrong. Of the circulation of the blood they were wholly ignorant; for having confined their observations to the dead subject, and finding the arteries empty, and the veins full of blood, they supposed the latter to be the only vessels concerned with the blood, and, consequently, there could be no real circulation; but they fancied that the blood flowed out towards the surface in the day, and back again in the night, similar to the ebbing and flowing of the tide. As the capillaries always continue their action for some time after the heart and arteries cease to beat, they of course pass all the blood from the arteries to the veins, leaving the former entirely empty. The ancients, therefore, not perceiving any other use that they could assign to these hollow tubes, supposed that their office was to give passage to the *animal*

spirits. And believing that the blood was pretty much stationary, and supposing that all diseases were occasioned by impurities in the blood, they imagined that the torpor of the forming stage of fevers was owing to the blood being clogged in the vessels by its impurities, and that the subsequent reäction was gotten up by the *vis medicatrix*, in order to throw it off, which they imagined was done by getting up a commotion in the blood, similar to an ebullition or fermentation, by which the offending matter would be separated and cast to the surface, as syrup cleanses itself by boiling, or wine and cider by fermentation. The congested state of the capillaries they supposed was occasioned by the viscid matter which was being thrown to the surface, and contented themselves to wait until the fermentation would thin it, and prepare it for expulsion; consequently, all that the medical attendant then thought could be done, was to use such means as he supposed would facilitate the fermentation, or guard against excess, lest there should be too much stress upon the vessels, and occasion a rupture.

We may now smile at their fancies, but some of the greatest minds that ever illuminated a human body believed them, and their successors for many centuries were contented to take them for granted. Even the great Sydenham could see no farther, but was evidently much perplexed to account for some of the facts which presented themselves to his observing eye upon this then established theory. Among other difficulties, he acknowledges himself unable to explain how the blood of a healthy person could be rendered so impure in a few days after going into a sickly atmosphere, as to cause such grave results as he often witnessed.

SPASMODIC THEORY.

After the discovery of the circulation of the blood, and after physicians had acquired a better knowledge of the nervous system, their views as to the cause of the phenomena of fever became somewhat changed. Seeing that the idea of an ebullition or fermentation of the blood, as understood by their fathers, was unreasonable, but still holding on to the principal idea, that the cause was some offending matter

in the blood, and still, too, retaining the notion of a *vis medicatrix*, they imagined that the excitement was brought about in this way: that the morbid matter, coming into the extreme arteries, was then detected by a kind of sentinel placed at their mouths, which caused them to contract and prevent its passage, and, consequently, refusing passage to the blood also; and that the *vis medicatrix*, perceiving this difficulty, raised an excitement in the heart and arteries, in order to overcome the contraction, and force the viscid humors on, *nolens volens*, to the secretory organs, where they could be eliminated. It is therefore evident that those embracing this theory perceived the nervous disturbance and the congestion of the capillaries; but, misunderstanding the cause of the congestion, were led to adopt a mode of treatment that was not the best. For, seeing that the commotion raised by their blind presiding genius was only making matters worse, by causing a still more profound engorgement in the capillaries, by forcibly pressing the blood into them, which they did not transmit, and thus endangering the integrity of the system, they resorted to vigorous bloodletting for overcoming the excitement, which, though justifiable when nothing better can be done, yet is always an evil, because of the subsequent debility which must necessarily ensue; and still having the fear of lentor or peccant matter before their eyes, and having discarded the gross idea of a fermentation, they could think of no plausible way of getting clear of it, but by giving powerful secretory remedies to excite the organs to throw it off: hence arose the famous system of active purgation. Now, to excite the secretory organs to resume their natural action is proper enough, but this over-action was as blind an effort as what they attributed to the *vis medicatrix*—it prostrated the patient by a foolish onslaught on an imaginary enemy. That this system was *generally* successful, does not prove that it was beneficial; for after the doctor had bled and purged his patients, until he saw that he dare bleed and purge no more, he usually referred the case to the efforts of nature; which, being let alone, often gradually brought about a restoration; and though the patient did not die, yet the system was so

debilitated that his health was usually ever afterwards precarious.

SYMPATHETIC THEORY.

In the process of time, as the nervous system was still better understood, and its influence in the economy more clearly perceived, the attention of theorists was directed more particularly to it, and still another theory of fever was gradually concocted. It was supposed that a strong impression being made upon the sentient extremities of the nerves, would be transmitted throughout the whole system by *sympathy*—not exactly through the medium of the nerves, but in some other way, never defined, and by some other power, never understood; but either the same or something else, in the place of the ancient *vis medicatrix natura*. But however it was defined, or however it was undefinable, this class of medical theorists supposed that an impression, once made, would be continued for a definite or indefinite period: as the vibrations of a musical chord continue after it has been struck; or like waves, which widen and follow each other after having been set in motion by the contact of a pebble with the surface of a placid lake; or as vital action, once excited in an *ovum*, will go on until it converts the whole mass into an organized body, bearing the impress of the first cause that sprung it into motion, though that cause was applied but once. In some such way, they supposed the impression which was made by the remote cause upon a sentient surface was continued by independent action until it spent its force, like the vibrations of a wire, or was stopped by the power of some other greater or contrary impression, which would set up a new form of action. Upon this theory was founded a new plan of treatment: discarding entirely the notion of peccant matter in the blood, the leading idea was, to give some medicine that would set up a different action; which would swallow up or counteract that produced by the remote cause, and one which they fancied would be less injurious to the system, and would subside of itself. This was an ingenious and beautiful theory, but, like many other beauti-

ful things, it led its votaries astray. It was this theory which introduced those potent remedies into general use, arsenic, mercury, and some others; and whether the morbid action by them set up has sent more persons prematurely into the other world than the diseases they were intended to counteract would have done, is a problem which eternity alone can solve.

So completely did this theory take possession of the medical mind, that, within my own recollection, no physician thought himself at liberty to neglect to mercurialize his patient, in almost every form of fever of the continued and remittent types; while arsenic was the remedy chiefly relied on for intermittents; since then, quinine has taken its place, which, though not much more certain in its operation in arresting that disease, is greatly less objectionable in its effects. But though both are successful, yet the success of neither is owing to the truth of the above theory.

PHLEGMASIAN THEORY.

The next theory which obtained any general notoriety, was what might be properly designated the PHLEGMASIAN THEORY, originated by the celebrated Broussais. He believed that all fevers originate from, or rather are identical with, inflammation of the stomach and bowels, and hence ignored the term *fever*, and substituted that of *gastro-enteritis*.

He argued that the condition of the system known as fever, whether the cause be a local injury, or miasm, or contagion, or any thing else making a morbid impression, can never become developed till inflammatory action is set up in the stomach and bowels.

Broussais, being learned and talented, presented his doctrines in such plausible form, and defended them with so much ingenuity, and enforced them with such self-reliant confidence, that, supported by his great popularity, they swept over the civilized world with the force of an epidemic, so that, with few exceptions, all who did not fully embrace them were more or less impressed. What aided powerfully in giving currency to this theory was, that it presented something as a foundation which was readily recognized by

the senses—something that could be understood; and as the medical mind had become weary of abstractions, it embraced this with a zest.

Now I think I have shown that fever consists in nervous disturbance and capillary inaction; and, as the capillaries of the chylopoetic viscera are equally involved with those of the surface and other parts of the system, and as they are all dependent upon the ganglionic system, or nerves of organic life, for nervous influence, and as these have their great centres in close proximity with the digestive organs, from which they receive the nervous power by which their functions are performed, it is not at all surprising that a lesion in their centres, sufficiently grave to cause general capillary inaction, should also develop marked evidence of chylopoetic derangement; and, as capillary debility and consequent engorgement constitute the first stage of inflammation, it is but a natural consequence that the symptoms characteristic of incipient inflammation in the stomach and intestinal canal should be evident in the early stage of most fevers, or that actual inflammation should afterward be set up by the disturbing forces. But a belief that there is *gastro-enteritis* in all cases of fever, depends upon evidence so far-fetched, and so little supported by fact and observation, that it seems now passing strange that as good a thinker as Broussais evidently was, could have been led to adopt it as a foundation for a hazardous plan of treatment; and still stranger that others, not biased by the pride of opinion or the ambition of originality, should have been also misled. But argument is unnecessary, as at present but a few fossil examples of the genus *medicus* retain the impress of this theory. But, though founded in error, this theory also sprang from the observance of real phenomena connected with fever, and its attempted defence was the occasion of throwing much light upon the nature of the lesions which take place in the digestive viscera during an attack of fever; as, also, to show up the sympathies which obtain between these organs and other parts of the economy. It did more; for though in practice it caused many a poor fellow to succumb under the use of the lancet, yet it effectu-

ally checked the more murderous practice of hypercatharsis, [over-purging.]

COOKE'S THEORY.

Some thirty years ago, a great man, then a resident of Virginia, had his attention particularly drawn to the nervous disturbance and subsequent congestion which are such prominent characteristics of every form of fever, and, not being able to account for them upon the sympathetic theory, directed his strong investigating powers to the subject, and framed a very plausible theory, and instituted a mode of practice in accordance with it, which had a wide popularity for a number of years, especially in the Mississippi Valley, and is still adhered to by many. I refer to John Easton Cooke, of Transylvania. His theory was substantially this: First, disturbance of the nervous system. Second, weakened action of the heart. Third, congestion of the veins, and especially of the *vena cava ascendens*. Fourth, reäction of the heart, to relieve itself of the pressure of blood. Now this theory came very near being true: the only departure was this, that he made the debility and congestion of the capillaries secondary to engorgement of the great veins; which one departure misled him, and caused him to adopt a mode of practice which was not the most appropriate. For, looking as he did upon congestion of the vena cava as the cause of all the other symptoms, he only thought of the shortest method of unloading it; and knowing that the liver is the only organ which forms a secretion from venous blood, and therefore draws its resources directly from the stagnant fountain of all his fears, he, of course, chose that as the outlet through which the *black blood*, by being converted into *black bile*, could be discharged from the system.

Cooke's theory led him to denounce the then fashionable practice of mercurializing fever patients, as useless; but as he knew of no means which would excite the liver to throw off black bile equal to calomel, he chose that as his chief reliance; not giving it, however, in small, salivating doses, but in twenty, forty, and one hundred grain potions; just as much, in fact, as might be found necessary to bring

the black bile, submitting to an occasional bad salivation as a necessary evil.

To calomel he added rhubarb and aloes, which formed his famous cava pills, and with these, and occasionally some other more active purgatives to make them operate, he proposed to do all that could be done in the management of all the forms of fever. This theory was plausible and easily comprehended, and the practice based on it easily followed: the black blood caused the disease, and this must be converted into black bile, and calomel must be given in just such quantities as would bring the black bile; and if the patient sunk under the ordeal, or died of a gangrenous mouth, why, it could not be helped.

Now if this great man's mind had laid hold of the fact that torpor of the capillaries causes the congestion of the large vessels, he would have directed his efforts rather to opening these sluices, so that the obstructed blood might flow on naturally again, rather than have attempted to empty the congested veins by the indirect process of pumping at the liver.

THOMPSONIAN THEORY.

About the same time as the above, another theory was gotten up, and a practice founded thereon, which had a wide-spread popularity for a time; and though the author was not of the profession, and very few within its pale embraced it, yet as it made a great sensation, and especially as there were some things embraced in it which pointed to the truth, I shall here briefly notice it. I mean the theory and practice advocated by Samuel Thompson, of "number six" and steam notoriety; who, though not a really great man, had some of the elements of greatness about him, viz.: inquisitiveness, some originality, great boldness, and indomitable perseverance. He, seeing the evidence of capillary debility and consequent want of vital action, and perceiving that in all fevers there are alternate paroxysms of heat and cold, and sometimes both, in excess at the same time, in different parts of the body, conceived the idea that fever consisted, essentially, in this contest between

heat and cold; and thus, by mistaking an effect for a cause, and considering heat and cold both positive entities, and investing them with a kind of fanciful personation, he imagined that a strife for mastery was always going on in the system between them; and that when heat preponderated, the man was well; when cold obtained the ascendency, the man was sick; and if cold triumphed, then the patient died.

Now all that the physician had to do, according to this theory, was to assist the friendly power to overcome the unfriendly—to generate heat and subdue cold. For the purpose of generating heat and throwing it out, he gave many powerful stimulants, the best among which, and the one most relied on, was cayenne pepper, variously prepared.

If he had stopped here, he would have done less harm; but, filled with the idea that internal cold was the enemy he had to contend with, he went to work with heated rocks, and the vapor of vinegar and water, to drive it from its hiding-place. And here, for the want of a philosophic knowledge of the operation of the hot vapor bath upon the system, he worked contrary to the object intended; for hot vapor, though highly stimulating to the surface, when first applied, soon becomes one of the most debilitating measures, in consequence of the exhaustion it occasions of the vital energies of the surface, and the profuse exhalation of the serum and salts of the blood. But Thompson, from what motive is not apparent, adopted a means which repaired, in a measure, the mischief he had occasioned by excessive steaming: at the conclusion of the operation, he threw upon the patient a pailful of cold water, which, being a powerful stimulant and generator of vital energy, tonicity, and irritability, prevented the previous exhausting process from having as disastrous an effect as it otherwise would have had. But many a poor fellow had his vital powers so completely exhausted by, first, the lobelia, and then the protracted application of steam, that even the cold *douche* could not arouse him, and he died very quickly under the eye of his steamer.

The most intelligent of the Thompsonians soon discovered

that the steaming would not do, and abandoned it. My chief object in noticing this subject is to draw attention to the fact, that notwithstanding the steamers were not directed by the least glimmering of sound philosophy, yet the powerful *stimulants* they used, often proved so beneficial, in spite of the injudicious steaming, that their success at times was most striking—sometimes breaking up a disease in a single day, which, under the regular depleting regimen, would have required weeks. Such instances could not fail to draw attention; and had it not been for an occasional case which suddenly went off under the operation of lobelia and steam, which affrighted the common observer, and the ridiculous absurdities which abounded in Thompson's book, which disgusted the intelligent, this system would have spread wider and lasted longer. It had its day and is gone, but it may be said of it, which cannot be said of some other theories, that the world is the better for its having existed. It did this, at least: it raised in the public mind such a horror of the abuse of mercury, that the faculty was obliged to curtail the use of it, in deference to public sentiment. It did more than this: it satisfied many observing physicians that fevers could be carried to a successful termination by other means beside the everlasting purging of the liver, and that, because a man had a hot skin, he was not obliged to exchange it for an artificial cholera morbus. They saw, too, that, contrary to preconceived opinion, cayenne pepper did not always increase a fever, but that, under its influence, the heat often subsided and left the patient relieved without any evacuation whatever; and little as the faculty may be disposed to acknowledge it, and, in fact, little as they may be generally conscious of the fact, yet, to those who have been observers for the last twenty years, it is evident that the Thompsonian theory impressed some of its features upon the regular practice, which was thereby improved. It cannot have escaped the observation of every physician who has been in the practice during the above period, that the method of managing fevers has, in that time, changed very materially. I speak generally, for there are some *set-fasts* in the profession,

who, as a worthy contemporary has said, "serve to designate the exact state of theory and practice of the period of time when they studied their profession, or of the particular school of which they took lessons." Such practitioners still salivate, give the cava pills, or bleed and nauseate, just as their preceptors did when they studied. But to the honor of the profession it may be truly said, that physicians are generally men of intelligence and discernment, and are ever ready to embrace truth in science, and avail themselves of every better way of combating disease.

PRESENT THEORY.

The present seems to be a transition epoch, with regard to both theory and practice: the revelations of science have exploded all the old theories, and no well-digested new ones have yet been established, so as to gain any thing like the general consent of the profession. Old modes of practice have also given place to means which the enlightened observation of practitioners has discovered to be better adapted to subdue or counteract diseased action. We accordingly find bleeding only resorted to in urgent cases; salivation is almost wholly discarded, as a means of curing fevers; calomel is given less often, and more sparingly; drastic purgatives mostly abandoned, and nauseants limited to particular cases. In the meantime, other means have become fashionable—almost all of which, I wish it to be noted, are stimulants—such as opium, quinine, spirits of turpentine, etc. This change has been brought about so gradually and so silently, that one can hardly tell when or how it was done, or point to any person in particular who has been prominently instrumental in bringing it about; and many successful practitioners perhaps would be puzzled to give a sensible reason for the change, unless it should be the ever-ready one, that diseases have changed, and the mode of treatment had to be varied accordingly. But this reason is more specious than sound; for although it must be acknowledged that fevers are of a lower grade of action in this country now than they were twenty years ago, still

the difference is not so great as to sanction a *contrary* mode of treatment. The description of fevers by our oldest authors will do very well by which to identify them yet. Even the modern disease, as some suppose it, typhoid fever, was very accurately described by Sydenham in 1685, under the name of *stationary fever*. The fact is, man has remained, ever since we have any history of his characteristics, very much the same kind of animal: he eats and sleeps, loves women and wine, and other excitements, just as he did in the days of father Noah. The laws of nature, I suppose, have since that time undergone but little change, and it is fair to presume that, both remaining the same as of old, like causes will produce like effects still. But while the laws of matter and of vitality have remained the same, man's knowledge of them has been steadily enlarging, and, as a consequence, there has been a corresponding change in the means which he calls into requisition to correct the aberrations of vital action as he has improved in the knowledge of the workings of the vital forces and the nature of their aberrations, and the nature of curative agents with regard to the relation they sustain to the vital forces. And I am proud to be able to say, in truth, for the profession of the present age, that they have made larger advances in obtaining a correct knowledge of the laws of matter and of life, than were accomplished in any other, or, indeed, in many other centuries; and I am glad that I can say that the practice of the present time is not what it was when I studied the rudiments of my profession: the change has been for the benefit of mankind, as well as for the honor of the profession of medicine.

But to return to the subject under consideration, that the present prevailing practice is a stimulating one, and therefore this plan of mine is in harmony with the tendency of the age. I claim very little that is original; merely this, that I have pointed out, somewhat more clearly than was before done, the nature of the remote cause of fever, the kind of impression first made upon the system, and the effects produced by these impressions; and then pointed out the means by which these effects can be best removed. I

have shown why stimulation should cure, and how it cures, and thus, by understanding exactly what is wanted to be done, I have been the better able to select the exact articles best adapted to meet the indications. I have said that opium, quinine, and spirits of turpentine are the means now most relied on in the treatment of fevers, and we know that they are all powerful stimulants; and I contend that it is exactly because they *are stimulants* that they have attained their present popularity. But they are not the best stimulants for this particular purpose. Opium is essentially a nervous stimulant; given in moderate doses, it excites the nervous centres and causes increased nervous power to be sent out through the whole system, and in this way becomes, indirectly, a general stimulant. But in large doses it overwhelms the brain and other nervous centres, and disqualifies them for sending out their usual influences; hence loss of consciousness, loss of sensation, diminished circulation, diminished or suspended secretion, diminished irritability—in short, diminished vitality. And although there are occasions when the bringing about of this fearful state of things is not only proper, but imperatively called for, yet it is always obtained at a serious loss of vital energy, and should not be resorted to when less objectionable means will succeed.

The same objection lies against the use of quinine. It too is a nervous stimulant, and unquestionably produces its specific effects by stimulating the nervous centres: all who have taken it in moderate doses will testify to the pleasurable excitement it occasions, and all who have taken it in large doses can equally testify to its horrid effects upon the brain; no other kind of intoxication is so insufferable. And although I would regret the loss of this Samson stimulant, still I would never use it for exciting the capillaries, by its indirect action through the medium of the nerves, when I could obtain a better result by the *direct* action of piperin, without any expense to the nervous system. It is true, I give in my prescription a nervous stimulant, the valerian, but it is one of a mild nature, not capable of producing intoxication like opium and quinine, and there-

fore not liable to exhaust the vital energies. Some persons with whom I have conversed on this subject have seemed to labor under some difficulty in understanding the difference between *direct* and *indirect* stimulation; this appears to me to be very plain: direct stimulation is obtained by exciting the part itself, indirect stimulation by exciting the origin of the nerves, by which a part is supplied: the kidneys may be stimulated directly by giving a diuretic, and they may be stimulated indirectly by acting upon the brain by fear. The stomach may be excited to vomiting by an infusion of mustard, or by presenting disgusting images to the mind, or by a concussion of the brain; so the capillaries may be excited by the direct action of piperin carried to them by the blood, or it may be done indirectly by exciting the brain and spinal marrow, and increasing the nervous irritability sent to them. But it may be asked, Why should indirect stimulation produce exhaustion rather than direct? I answer, first, because every unusual excitement of a nervous centre has a tendency to weaken its energies; we know that this is true, because every time a nervous stimulant is repeated, the dose must be increased, in order to obtain the same effect; this is true of alcohol, opium, quinine, and every other nerve-stimulant. And secondly, the reverse is true of direct stimulation: the more the senses are exercised, the more acute they become—that is, they are more easily impressed by their appropriate stimulants; the oftener emetics are administered, the less doses will be required to produce emesis, [vomiting;] the oftener the surface is excited by friction or the cold bath, the more active it becomes; and so of all direct stimulants. The philosophy of it is, that they act not upon the nerves themselves, but upon the irritability of the part which the nerve has supplied. We must recollect, however, that even direct stimulation may be so powerful as to exhaust the irritability of the part, when no further impression can be made until it is restored; thus, the skin may be stimulated by rubefacients [mustard, etc.] until it becomes insensible; the bowels may be over-stimulated by drastic purgatives until nothing will excite them; but, unless carried to this stage

of exhaustion, the more any part is stimulated by direct action, the more impressible it becomes. I think these reasons are explicit enough upon the subject, and show why medicines which act primarily upon the brain exhaust the system, and should not be resorted to unnecessarily.

But to return to the subject. Spirits of turpentine is the next stimulant now most relied on in the treatment of fevers, and is much less objectionable than opium or quinine, as it is a simple, direct stimulant; but there are objections that lie against it also. It is disagreeable to the taste and offensive to the stomach, and, in considerable doses, is too powerfully stimulant to be borne well by the coats of the stomach and bowels; and when taken into the circulation, it often acts so powerfully upon the kidneys as to produce subsequent weakness in these organs. In the oil of sassafras I find a less objectionable remedy; it is pleasant to the taste, grateful to the stomach, harmless to the mucous surface of the alimentary canal, it readily enters the circulation, and acts as a valuable assistant to the piperin in stimulating the capillaries. Besides these important effects, as has been said before, it reaches the nervous centres and destroys or neutralizes the remote cause, thereby preventing any further injurious effect upon the system.

MODES OF CURE.

Some, perhaps, may think lightly of my system, because it promises to do so much by means of so few remedies; but it is not more restricted in its means than many other systems which have at different periods obtained the ascendency and run the round of popularity. In fact, every theory of fever has suggested a certain class of remedies as the appropriate means for effecting the object thought necessary to be accomplished, and these means have generally been few.

The Humoralists relied upon a few bold detergents; the disciples of Cullen and of Rush, upon the lancet, and a few other debilitants; the Sympathetics, upon mercury almost entirely; Broussais, upon the lancet and demulcents; the followers of Cooke, upon calomel and the cava pills; and

the present dominant practice embraces little more than the trio, opium, quinine, and turpentine.

The fact is, that this limiting of remedies is characteristic of science, and distinguishes it from empiricism.

In the dawn of medical knowledge, when there was nothing to guide the practitioner but blind experience, a doctor's prescription often embraced a multitude of medicines—sometimes as many as fifty, including those of the most diverse and contrary powers; and while some of these might happen to suit the case, others would be useless, and others injurious. It is the glory of the scientific physician of the present day, that he gives nothing without having a specific object in view, which he expects to accomplish by its exhibition; and as the elements of disease are always few, it follows that the better these elements are known and recognized, the fewer will be the means called into requisition to meet the indication.

It would be very strange if any theory should be originated by a great mind, and receive the assent of the learned for a considerable time, unless it were founded upon some ascertained undeniable truths. We accordingly find that each of the theories of fever which have received the confidence of the medical profession at different periods, was based upon some of the recognized phenomena presented in the progress of the disease, and hence all contain some truth. The ancient Humoralists perceived the nervous disturbance and the capillary engorgement, and if the case terminated favorably, they saw that much morbid matter was thrown off by the secretory organs, and believed that these vicious humors had caused the disease. Now it is a truth that morbid matter does accumulate in the blood in every case of fever, but it is a consequence, and not a cause: the secretions being suspended by the debility of the capillaries, and the spasm or altered sensibility of their secretory terminations, a retention of the excrementitious parts of the blood is the consequence, and a depravity of that fluid is the result. But the *condition* of things which caused the fever and suspended the secretions must first be removed, either by art or nature, before the secretory

organs *can* be made to act, so as to depurate [purify] the blood; so that the cure is actually performed before the expulsion of the morbid matter.

The next theory in succession—that of spasm of the extreme vessels, and peccant matter in the blood—was based upon the observance of pretty much the same phenomena as the pure humoral. Those who embraced this theory had their attention drawn to the spasm which evidently takes place in most cases of fever in some degree, and in high grades forms the most prominent symptom; and supposing that the engorgement of the capillaries was, in all cases, wholly caused by this spasm of their mouths, went to work to cure the disease with this idea prominent above all others. But this spasm is not the prime cause of the congestion of the capillaries, for the congestion takes place in the stage of depression, before there is any evidence of spasm, which only comes on during arterial excitement, and gives way when that is allayed. In low grades of fever, there is little or no evidence of spasm at any time; and in the collapsed stage of all grades, it is not only wholly absent, but the mouths of the capillaries are often so relaxed, that they pour out, as we have seen, the fluid constituents of the blood without check and without alteration; producing effusions, colliquative sweats, or diarrhœa. But the purple hue of the surface shows that the capillary debility and engorgement are *still* not at all relieved.

The sympathetic theory was based less upon truth and reason than either of those which went before it; still, there may be found some support for it in analogy: we know that a specific action does obtain in some forms of chronic disease, by which a peculiar organization is produced, and until the specific action of the vessels is changed, they will manufacture no other product; but the action in fevers is not specific, but is simply too high or too low, and all that is necessary to be accomplished, in order to remove the disease, is to equalize the action; for as soon as this is done the fever is gone, though the patient may still be feeble and require time to regain his vigor; yet the

moment there is harmony established between the action in the large blood-vessels and the capillaries, the fever is destroyed.

The Broussain theory being based upon supposed inflammation in the stomach and bowels—a circumstance which often does actually exist in many cases of fever, and in all there is that condition which constitutes the first stage of all inflammation, viz., nervous disturbance and capillary debility, followed by engorgement—had therefore many undeniable facts to lean upon; but as this condition of the digestive organs is only a part of a general condition obtaining throughout the entire system, it must therefore be a consequence and not the cause of the febrile movement; in other words, the aberrations observed in these organs being coëxistent with like aberrations in every other part, must be referable to the same cause; and, in fact, all do arise from general nervous disturbance, which has produced general capillary debility. The one idea of the disciples of this theory was to subdue inflammation, which naturally suggested the lancet, demulcents, tisans, etc.

The next theory considered was that of venous congestion: this had a most prominent phenomenon, one that is conspicuously observable in every case of fever, to rest on. But it is strange that the far-seeing mind of Professor Cooke failed to perceive that venous congestion cannot, in the nature of things, ever take place without capillary obstruction: mere weakened action of the heart can never be the cause of venous congestion; for while the capillaries continue to act with usual vigor, there can be no oppression of the heart, for we see that they pass the blood on from the arteries to the veins, even after the heart altogether ceases its motion; and if the heart acts, though it should be feebly, it will send the blood on and relieve the veins, unless there is obstruction. We often see those whose pulse is ordinarily so feeble that it can but barely be felt, and yet the individual feels well—there is no venous congestion; and, on the contrary, we often find the heart in the hot stage of fever beating with many times its usual force, even causing the whole frame to tremble under

the shock of its power; yet there is, nevertheless, great venous congestion at the same time. So we see that Cooke was wrong in giving weakened action of the heart as the cause of venous congestion. Capillary inaction is the cause, and the congestion can be removed in no other way than by restoring the action of the capillaries.

CHAPTER V.

MYSTERIES CONNECTED WITH FEVER.

Fordyce, in his Treatise on Fever, mentions a number of phenomena connected with its history which he considered mysterious, and professed himself wholly unable to explain. Subsequent writers have also failed to give any solution of these difficulties. Now, as I profess to have discovered the true condition of the system in which the *febrile movement* consists, and the nature of the remote cause which produces this condition, it might be expected that I should be able to point out, more clearly than had been done, the cause of the phenomena which grow out of the *febrile movement;* and I think I am not mistaken in the opinion that I can, in a good degree, succeed in meeting this expectation. I will, therefore, take up the difficulties as they are presented by Fordyce, and endeavor to show that they all are natural results, growing out of the nature of the remote cause of fever, and the condition of the system brought about by its ordinary operation. Now if these explanations were only interesting to the curious inquirers after abstract scientific truth, they would be omitted in this work; but, as they will not only serve to throw much light upon the nature, causes, phenomena, and effects of fever, afford much practical knowledge as to the effects of various remedies in its treatment, and suggestions as to how the disease may be prevented, and especially as they throw much light upon the leading doctrines upon which the successful treatment recommended in this work is founded, I am satisfied the reader will find ample compensation for devoting the time and attention necessary for a very careful perusal.

The first mystery which Fordyce points out is, that the remote cause is more operative in the night than in the day; the second is, that paroxysms of intermittent fever occur principally in the day; and the third is, that in continued fevers there is commonly an evening exacerbation. I will include the explanations of all these in one chapter, as they grow out of the same circumstances.

The points upon which these explanations are based have been pretty fully dwelt on in the preceding pages of this work, and will here only be stated, viz.: that the remote cause of fever is of the nature of a narcotic poison, a nervous depressor; and the condition of the system produced by its operation is that of narcotism or nervous depression, followed by nervous disturbance and capillary debility; and that the hot stage or reäction in fever grows out of these, with all the other phenomena, as pains, aches, suspended secretions, etc., etc.

It is a well-established fact, that exposure to the cause of fever in the *night*, is much more apt to bring on an attack than the same exposure during the *day*. Certain malarious districts, which can be visited in the day with comparative impunity, cannot be remained in during the night without the most imminent hazard of an attack of fever, and more especially if they be slept in. The same thing has been observed to be true, in a less degree, in every malarious district which has been made the subject of observation. But why this is so, has never been clearly accounted for.

There probably are several coöperating causes; but the one most operative is, as I think I can show, that at night there is a lower degree of vital energy possessed by the system than in the day. That there is less vital energy at night, is evident from many considerations: the system is much less impressible—which is a beneficent arrangement of our Creator, by which we are better able to compose the body to sleep. The same amount of noise or other annoyances will not keep a person awake in the night that will have that effect in the day; and this is not because of the habit of taking sleep at night; for I have conversed with

a number of men whose business required them to be awake all night, and forced them to take their sleep in the day, who all informed me that slighter causes prevented sleep than did when they slept at night. It is not because of the stimulus of light, for persons soon acquire a habit of sleeping in a strong light, and often prefer it. It can, therefore, only be accounted for by admitting that the nerves are less impressible in the night than in the day. Many other sources of evidence that this is so could be given if it were necessary; for example, we do not digest as well in the night; are more subject to take cold from exposure, etc.: all showing a weak condition of nervous energy.

Carpenter admits the fact that nervous *sensibility* is less in the night than in the day, and, among other evidences of this, refers to the well-known circumstance, that a much greater effect will be produced by drinking a given quantity of alcoholic liquor in the morning than in the evening. He does not attempt to account for this, but I presume it arises from the same cause which operates upon certain plants and flowers to induce them to fold up their leaves or petals in the evening, as though about to die, but which expand again in full vigor to greet the morning sun. Solar light, or something in connection with it, plays an important part in the business of vitalization. But not to go into any speculation as to the cause of the deficiency of vital power experienced in the night, I will assume it as a fact conceded by the best writers, and abundantly susceptible of proof. Even wagoners are fully aware of this fact, and hence will allow their teams to rest, especially in the latter part of the night, should they have to drive the harder in the day.

The traveller who rises before day to press forward on his journey, will find both himself and steed injured by the imprudence, and both will fail, if the journey be long, sooner than he who takes his morning rest, and pushes harder in the day, even beneath a tropical sun. But whatever the cause may be, it is certain that it is less operative in the *first* than in the *latter* part of the night. Fordyce supposes that the greatest liability to be impressed by the cause of

fever is between the hours of eight in the evening and eight in the morning, and that the liability is much greater in the latter half of this period than in the first, viz., between two and eight in the morning. Southern planters have arrived at the same conclusion by observation alone, and hence find it better to let their hands remain in-doors in the early morning, and work them later in the evening.

It would therefore seem, that either the supply of vital influence, which is generated during the sunny hours, lasts for some time after they have fled, or that the solar rays leave the air charged with vivifying power, which is operative for a time after they are shut off; and that it is only after the sun has again blessed the earth for a season, that this vital influence is felt in sufficient force to restore the nervous power to its full vigor. Hence the almost universal desire for stimulation in the morning, laying the foundation of the old custom of the *morning dram*, (better broken than kept, however,) and the still more universal one of the morning cup of tea or coffee. Hence, too, the well-known fact that the convalescent and the valetudinarian dare not venture abroad during the early morning hours. It is therefore certain that nervous sensibility and nervous power are both less in the night than in the day. But the inquiry may naturally arise, If the nerves are less impressible in the night, and the cause of fevers acts upon the nerves primarily, how comes it that a greater effect is produced? This question implies the idea that the cause of fever operates by producing nervous *sensation*. Now *sensibility* resides in the remote nervous expansions, and only there; and *sensation* can be excited in no other way than by impressions made upon these expansions. But almost all writers upon the subject now agree that the poison which causes fevers does not act by impressing the sentient nerves on the surface, or in the lungs, or alimentary canal, but that it enters the circulation, and reaches the brain and other nervous centres, and there exerts some influence upon the nerve-matter, which sets up in it a morbid *condition*, and that morbid *innervation* is only a manifestation, an evidence, a symptom of this condition.

Now a living organization possesses the power to a certain extent of preserving itself from, or resisting the action of, hurtful agents; and this power of resistance is known to be in direct proportion to the degree of vital action that may be possessed at the time—and vital action, we know, is dependent on, or rather is the direct result of, nervous power. The brain and nerve-matter in general is as much dependent upon the vital action of the capillaries which enter into its structure for a due performance of its function as is the liver, or any other organ, and hence we can perceive a good reason why the nerve-matter should be more easily injuriously impressed when nervous power is deficient than when it is in full vigor. But perhaps some one may say, As you believe the cause of fever to be something having the properties of a narcotic stimulant, of a nature somewhat allied to opium, alcohol, etc., and as you have admitted that persons are less excited by these at night than in the morning, how is it that the reverse is true with regard to the fever poison? This question arises from confounding nervous *impression* with nervous *lesion*. Now, though alcoholic stimulants do produce more *excitement* in the morning than they do at night, yet by being drunk at night they prove much more *injurious* than when drunk in the day: common observation has decided that he that drinks in the night will not live long, while the belief is equally general that a morning dram is good for health. Now, however erroneous the latter conclusion may be, it is certain that between drinking in the night and drinking in the day, the odds in the injury done the system are all on the side of the former. It amounts then to this, that narcotic stimulants do not injure the system by the amount of excitement they produce, but by the injury done to the nerve-matter itself, and these effects are not at all the same, are not even coincident in either time or place.

Excitement is the immediate effect of the direct impression of the stimulant on the sentient extremities of the nerves of the stomach. This is felt in full force within a few minutes after imbibing the potation; an hour or so later, enough of the stimulant has been absorbed and entered the

circulation to begin to manifest its deleterious effects upon the nervous centres: we now have a mixed effect of *stimulation* and *intoxication*. But if the draught has been large, in the course of a few hours more the direct effect made by the absorbed poison upon the nerve-matter so far preponderates over the impression made upon the nervous extremities, (though the stomach may be again plied with fresh potations,) that excitement becomes as nothing, and intoxication profound.

I hope I am now understood, that stimulation is in the stomach, and is conveyed by nervous connection to the brain, and sent out to the whole system by reflex nervous action; but that *narcotism* or intoxication takes place in the brain itself, and other nervous centres, by the direct action of the absorbed poison, through the medium of the blood, and that the torpor of drunkenness is not a *sensation* sent out from the brain and spinal cord, but a want of *nervous power* occasioned by a *lesion* of the brain matter, by which it is disqualified for performing its functions of elaborating nervous fluid.

It therefore can be readly understood how this low state of nervous power, which has been shown to exist at night, should render the system more susceptible to the deleterious influence of narcotic poisons, whether alcohol, opium, or malaria, and that we should expect the cause of fever to more readily impress the system at night than in the day.

The next inquiry is, Why do the paroxysms of intermittents occur principally in the day? Fordyce says, that so great is this tendency, that a retarding intermittent, after having travelled through the hours of the day, in place of keeping on through the dark hours, will leap over the night and occur the next morning; and an anticipating intermittent, in like manner, will travel backward through the hours of the day, and, skipping over the night, will come on the previous evening; so that in an anticipating quotidian there may two paroxysms occur in the same day. Now, preparatory to an attempt to explain this phenomenon, and give a reason for it, it will be well to consider what is the cause of a paroxysm of intermittent fever. I am aware

that *chills* and *rigors* are supposed to be the result of *depression*, and so they are remotely, but not immediately. A regularly built chill or *shake* of an intermittent is really the result of *reäction*—it is the first unsteady rebounding of the nervous power, and the more vigorous the rebound is, the more violent will be the rigors. Fordyce gives the full weight of his great character as a close observer in support of this position, though he merely stated a fact without perceiving its tendency. He says that whenever there are *rigors*, the patient will not *die* in that *paroxysm*—showing that rigors are evidence that reäction has commenced. Everybody in the South and West knows that if a fever is turned to the *shakes*, the danger is over. Is it not fair, then, to infer, as the fully developed rigor is the result of reäction, that the less degree of the same state, known as *chill*, is occasioned by the same thing, less operative? But I acknowledge that there are conditions, called chills, which are not the result of reäction, as in low grades of pernicious fever; but in them there is no sensation of a chill; on the contrary, the patient has a sensation of heat. I cannot now stop to explain this condition, but it is very different from the first stage of a paroxysm of ordinary intermittent fever. But though I contend that rigors are the result of reäction, it is not arterial reäction, but is simply a rebound of the oppressed nervous power, and when the nervous reäction becomes tolerably perfect, it brings about arterial reäction. We are now prepared to comprehend why the increased nervous power and nervous sensibility, in the day, should invite nervous reäction; and why it does not often take place in the night, when nervous power and sensibility are lowest. So that, while the low state of vitality in the night favors the impression of the remote cause of fever, the higher state of nervous power in the day excites the reäction which produces paroxysms of intermittents.

We have only now to find a solution of the last query. How account for evening exacerbations in continued fevers? Every writer admits that fevers are usually worse in the evening than in the morning, but the cause has been an enigma, about which few have ventured even a conjecture.

But admitting the conclusion, which has been fairly arrived at, that there is a lower degree of nervous power in the evening than in the morning, and another fact, which is generally conceded, viz.: that malaria enters the circulation —to these append the conclusion, which I think has been honestly drawn, that malaria is of the nature of a narcotic poison, we can then easily perceive that it, like all other narcotics, will exert an influence upon the nervous system, more or less readily, as nervous power at the time may be more or less vigorous; and that, as the morbid sensations which are felt in the system are nothing more than symptoms of the altered condition of the nerve-matter at the time, it is reasonable to suppose, nay, is absolutely certain, that these symptoms will be aggravated just in proportion as the impression upon the nerve-matter becomes more overpowering, and the resistance afforded by vital action less. We would therefore expect, that though the continued force of narcotic power of the remote cause remains the same in the morning as in the evening, yet its effect in producing nervous disturbance would be as much greater in the evening as the vital action is weaker. And even should the original cause have ceased to act, and the disease be the effect of the *condition* brought about in the nervous centres, yet it is certain that this condition would interfere more potently with the exercise of the natural function when the vital action was lowest than it would when more lively, and that greater nervous disturbance would be the consequence. But we have shown that the *febrile movement* is the joint result of nervous disturbance and capillary inaction. Now, though the action of the capillaries is not *immediately* dependent upon nervous influence, yet the *power* to act is certainly derived from the nerves, and is soon lost if nervous power is cut off; so that a lower degree of nervous power will soon produce a lower activity in the capillaries also; and hence, the whole mystery of evening exacerbations in fever can be unravelled as follows: In the evening nervous power is less, and vital action weaker; and, as a consequence, the effect of the morbid condition produced by the remote cause of fever in the nervous centres is proportion-

ally greater in causing morbid innervation, giving rise to increase of pain, restlessness, throbbing of the heart, and other evidences of nervous disturbance. Further, capillary action is in proportion to nervous power, and this being weaker in the evening, capillary action will be weaker also, occasioning, by necessity, an exacerbation of fever, for fever consists in nervous disturbance and capillary inaction —the disturbance in the general circulation, equally with all the other phenomena of fever, being a consequence of these; for the heart being supplied with morbid nervous influence, and being unduly excited by the stimulus of distension, occasioned by the partial stoppage of the blood in the capillaries, causing it to accumulate in the large arteries, increased action is the consequence. We therefore have, as the elements of an exacerbation of fever, increased nervous disturbance, decreased capillary action, and excitement of the heart and arteries; manifested by an increase of the pain, restlessness, headache, delirium, heat of the surface, paucity [scantiness] of secretions, etc.

But the reäction in the arterial system will, after a while, partially relieve the capillary torpor, and a better capillary circulation will cause an increase of nervous power; better nervous influence will be sent throughout the system, and a general amelioration will take place in all the symptoms, constituting the *morning remission.*

It appears, therefore, that answers to all the three inquiries which form the present subject can be found in the same facts, and that all can be contained in a nutshell, viz.: the cause of fever being a nervous depressor, and nervous power being lower at night, and vital action of course weaker, the nervous centres are, consequently, easier impressed injuriously; and that, although nervous power has a tendency to reäct after depression, yet it cannot do so until it gains force, or is aroused by some stimulant; therefore, no reäction takes place ordinarily until the stimulus accompanying the sun's rays arouses it; the first effect of which is manifested by that kind of reäctionary effort of nervous power which produces the constriction of the surface characterizing a chill, or the irregular muscular action

producing rigors. But sometimes this nervous reäction is so very slight that nothing more than a little shrinking and dinginess of the surface are perceptible; and this, too, rather late in the day, so that the arterial reäction which follows is continued into the fore-part of the night, making the *evening exacerbation* in continued fever.

HOW FEVER TERMINATES IN HEALTH.

Speaking of the natural tendency of most fevers to terminate in health, Fordyce says, page 121: "The author has, therefore, never seen, nor can himself conceive of any cause why a simple paroxysm of fever should go through its three stages, (cold, hot, and sweating,) and terminate in health." Now this does not appear to be so very mysterious; the whole process may be explained as follows: The malaria, whatever else it may be, is a nerve stimulant of a depressing kind; the nerves bear the impression for a certain time without yielding to its influence, or, in other words, becoming impressed; just as they will stand a certain amount of tartar emetic, (which is known to act by entering the circulation and impressing the nervous centres, particularly at the origin of the gastric nerves,) but if the amount be increased, there comes a time when they can resist it no longer, and great nervous prostration and sickness are the consequences: just so the nerves or nervous centres may be annoyed by the action of malaria, and appear not to feel it, but finally they become impressed, and then the condition of nervous prostration is at once produced which characterizes a chill or cold stage of fever. But, as we see in the case of tartar emetic the nervous depression giving place to reäction, causing violent contraction of the gastric and other muscles, a sense of heat over the whole body, and increased power and velocity of the heart's action, so it is in the other case also—the nervous system reäcts, and increased nervous power or influence is sent throughout the whole system; the heart is called into increased action, the sensibility of the whole system is exalted, and all the phenomena of the hot stage of fever are witnessed. And were it not for the debility of the capil-

laries which had been brought about by the previous action of the malaria, either by direct or indirect influence, the paroxysm of excitement would be, in this case, as ephemeral and would do as little harm as that occasioned by the tartar emetic. But the capillaries offering a resistance to the passage of the blood, all the phenomena of capillary congestion are added to those of arterial excitement, and the hot stage is protracted until the excitement has aroused the action of the capillaries—the first evidence of which is that those which compose the exhalants of the surface commonly relieve themselves of the congestion by pouring out perspirable matter; the other capillaries also go to work, but are not so immediately under our observation; the mouth becomes moist, dryness leaves the throat, the urine is again secreted, etc., etc. Now if the nervous debility of the capillaries has been but slight and of a short continuance, the excitement of the hot stage often restores them completely, and unless the remote cause is continued in its action, there will be no tendency to the production of a second paroxysm; and we often see examples of this in fevers occasioned by mere fatigue and exposure. But, generally, the debility of the capillaries is only partially and temporarily relieved by the reäction, and when it subsides in consequence of the relief of congestion obtained by secretion, the debility still remaining, and the first cause of the nervous disturbance still in action, a second paroxysm is brought about, precisely as the first was; but as the nervous disturbance will generally become less and less, either by the remote cause ceasing to act, or from the nervous matter becoming less and less sensitive to its influence, the capillaries become more and more perfectly restored to their natural condition, and the paroxysms will cease to return, except from mere force of habit, and this is often broken up by the occurrence of some considerable mental excitement, produced by accident or purposely planned. Thus we see that it is very natural and reasonable that the regular stages of fever should terminate in health.

HOW FEVERS CURE OTHER DISEASES.

Another circumstance which has been noticed by Fordyce and others, as often observed in association with the history of cases of fever, and which has been considered inexplicable, is that other diseases which the individual had been suffering under, at the onset of the attack of fever, are very often removed and disappear with the subsidence of the fever. Fordyce says, "Fever thus, and many other violent diseases, (which go on in a similar manner,) proceeding through their natural course, often leave the patient free, not only from the disease itself, but also from the decay arising from some less violent disorder, that had not in itself a natural tendency to terminate in health. Perhaps the manner in which this happens will ever remain inexplicable." But when we remember that the elements of diseases are few, how varied their effects and manifestations may be, and consider, too, the nature of these elements, it will not appear strange at all that the removal of the *condition* which causes the phenomena of fever will also remove the *condition* in which various other diseases essentially consist. In analyzing diseased action, we find it resolves itself into a very few simple elements: these are, alteration of the condition of the nervous power or sensibility of the local part, or of the whole system; diminished or morbid capillary action; and the changes of structure or morbid deposits, which are the results of the deviation from a normal condition of the nervous influence and capillary action. Now many diseases, which are very annoying, consist entirely in debility or perverted action of the capillaries, and it is reasonable enough that the reäction of the nervous influence, which brings about the hot stage of fever, and the general capillary excitement which is occasioned by that hot stage, should not only arouse the capillaries in general into healthy action, but also bring up these, which were particularly concerned in making up the disease previously suffered, to the point of healthy exercise; and thus, by removing the very *condition* out of which

the phenomena of that disease grew, it, as a matter of course, could afterward have no existence.

We will take the case of an indolent ulcer, as a good example for illustration. We know that there is want of nervous influence: its insensibility to applications which would produce great sensation when applied to a recent healthy abraded surface, proves this; there is also much capillary debility, as is manifest from the congested state of the part and its venous color; the nervous power and capillary action, therefore, are too low to bring about a reparation of the lost parts; and when efforts are made, the vitality of the product is of too low an order, and it proves an abortion and is sloughed off, or is removed by destructive absorption. Now, the general reäction in the nervous system, and the general excitement in the capillary system, characterizing a natural and well-developed case of fever, often extend with such efficacy to this local part as to bring it under the general influence, so as to permanently elevate it into a natural condition; and when the process of reparation is fully developed, which restores the loss of *material* which is suffered in the course of every case of fever, this part also is included in the general reparative effort, and a radical cure is the result. But sometimes we see the very reverse of this take place: instances are numerous in which the general powers of the system are so far exhausted by the ravages of a protracted case of fever, and especially if its vitality has been further depressed by the improper exhibition of mercury and other depressing agents, that although a reäction is set up in the general capillary system sufficient to bring about a tardy convalescence, yet some of the parts most remote from the centre of vital influence, or which have been more seriously debilitated by local applications, or possess naturally a lower order of vital action, fail to respond to the general recuperative reäction; and destructive absorption destroys the integrity of the part, and very obstinate ulcers are the consequence. In other cases, the general reäction is barely sufficient to prevent actual dissolution, and the whole capillary system remains permanently debilitated; every func-

tion is performed with difficulty and imperfectly, causing the patient to linger out a miserable existence, poorly compensating him for a brief respite from death. In other cases the capillaries of some important organ, which had suffered most during the progress of the fever, remain debilitated, and the patient suffers from a want of the performance of its particular function. It may be the stomach, causing indigestion; the bowels, producing costiveness or chronic diarrhœa; the liver, spleen, or kidneys, occasioning the evils resulting from an imperfect performance of their office; or, what is still more deplorable, it may be the capillaries of the brain itself which remain debilitated, producing mental imbecility or idiocy. It is, therefore, of the highest importance that a case of fever should not only be managed so as to save the life of the patient, but so controlled that no permanent injury shall result to the system; and, better still, that the nervous and capillary reäction be made so perfect as to swallow up, as it were, any previous local debility which may have been set up in the system, making the attack of fever prove a positive *good* to the patient, in place of an *evil.*

No plan of treating fever, of which I have any knowledge, can be compared in efficacy with the one I have described in insuring the above desirable results. And the reason of it is plain: it removes the disease without occasioning any shock to the system, without any expense to the vital powers, and without exciting over-action in any of the organs; its action on the system being a general one, and one in unison with the natural efforts of nature, viz., by directly allaying nervous disturbance, and exciting capillary action. Since adopting this plan of treatment in fevers, I had seen so many instances of local diseases yielding during the progress of the cure, that I afterward acted upon the hint; and, in other cases, purposely brought about the same general capillary excitement for the removal of the local debility, upon which chronic diseases are mainly dependent for their continuance. By this means, aided by external stimulation, I have succeeded in this city in curing many cases of obstinate scrofulous, syphilitic, and mercurial

or fever sores, which had resisted all ordinary means for years. But I will speak more fully of this subject under its proper head.

HOW TARTAR EMETIC ACTS IN AIDING OR PRODUCING A CRISIS.

Dr. Fordyce noticed the effects of tartar emetic in producing a state of the system very similar to that in the *crisis* of a paroxysm of fever, and often availed himself of this effect of that remedy to obtain a more perfect crisis than would otherwise have taken place; but he was altogether at a loss to account for the *mode of its action.* He says it was not owing to its emetic or nauseating properties, for it succeeded more perfectly in bringing about the *condition* referred to when it occasioned no sensible effect upon the stomach. These beneficial effects which he refers to, he describes as follows: "The skin becomes softer and moister; sometimes a profuse sweat; the mouth becomes moist; secretion is set up in the kidneys and intestinal canal, and a sense of ease is felt over the whole body." Now it does not appear very hard to explain these effects of *tartar emetic;* its general operation upon the system is certainly that of a powerful depressor of nervous power; its emetic effect is partly owing to its local action on the stomach, and partly (perhaps principally) to the general reäction which succeeds nervous depression. There is, I suppose, no real similarity in the mode of action of the nervous power and that of an elastic substance, but there is a striking *analogy* in the apparent phenomena of these operations: the farther you bend a steel bow, the greater will be the rebound, unless you bend it beyond its power of reäction, when it will either break or remain permanently bent. It is so with the nervous power: a slight depression will be succeeded by inconsiderable reäction; a profound depression by powerful reäction; an overwhelming depressing influence will at once break its integrity, or so cripple its powers that it can never recover its energy. Tartar emetic is capable of producing all these effects. An impression may be produced by it upon the nervous system so depressing as to extinguish life at once, without an amount of reäction taking place sufficient

even to produce sickness, much less vomiting; but it may also be given so as to impress the nerves so slightly, that even nausea is not occasioned; and the only appreciable evidence of reäction is increased capillary action, by which all the secretions are augmented. This is a most valuable property of that medicine, and may be taken advantage of in many cases to serve our purpose most admirably in our contest with morbid action. When there is a high state of general irritability or actual inflammatory action, I often suspend the use of my common fever syrup, and give emetic tartar, in *sub-nauseating* doses, until the active excitement is subdued, and then resume the syrup for the purpose of establishing permanent capillary action. The mode I prefer in which to administer the *emetic tartar*, is to add a grain to a common glass tumbler-full of water, and direct the patient to take a tablespoonful every half hour, until very slight nausea is produced, and then lengthen the interval.

OF DELIRIUM IN FEVER.

Fordyce describes two kinds of delirium which often attend continued fevers. One is characterized by hallucinations: the patient fancies he is talking with some person, but when spoken to this delusion vanishes, and he will answer correctly questions directed to him. This form of delirium is often quite violent in the evening and first part of the night, but subsides before day, and leaves the patient calm and quite rational. It is not attended with much stupor or obtuseness of perceptions, feeling, or intellect; and there is but little redness or injection of the eyes; and dissection discovers no trace of injury sustained by the brain. The second kind has many of the manifestations of the first, but differs in this, that the patient is not so readily aroused to a state of consciousness, and in the morning remission remains more stupid and insensible; the eye is duller and more injected, and the countenance more flushed. Dissection always reveals an injected state of the vessels of the brain. Fordyce is disposed to believe the first kind is purely an affection of the *mind;* but this conclusion is arrived at merely because he has not been able

to conceive of an alteration of the condition of the brain which would produce it, and yet leave no trace after death. It is very strange that this should have presented any difficulty to his mind, when he must have known that febrile action throughout the entire system consists in merely functional derangement; and that it is only when engorgement takes place in a particular part, so intense as to destroy the ability of the capillaries to again contract and so resume their natural size, or when actual inflammation has been set up, that any trace of the effects of the febrile movement can be detected after death.

The brain is as much concerned in producing thought, sensation, and nervous power, as the liver is in making bile, or the kidneys urine; hence, a functional derangement of the one will just as certainly and as naturally occasion an increased, diminished, perverted, or suspended exercise of its appropriate duties as it will in the others. What the *mind* is, independent of organization, we have no means of knowing; all its manifestations are made known to us through the medium of organized matter; and as long as that connection exists, it can only give us healthy manifestations while the medium through which or by which it operates is in a healthy condition. It is not surprising, then, that the milder grades of delirium should be produced by the same capillary inaction and engorgement which give us the functional derangements which we continually see in the biliary and other secretory organs during the progress of a fever; or that dissections should be no more successful in showing an altered condition in the one case than in the others. All are the result of altered action, produced by a distension of the capillaries, which their contractility removes after the heart ceases to force the blood into them, leaving no marks of their previous condition. But if the distension of the capillaries is carried beyond a certain limit, they lose the power of contraction, and, in very low grades of fever, delirium gives place to coma; and dissection shows the capillaries of the brain distended to their utmost capacity with black blood; other organs reveal the same condition. But if actual inflammation is set up in the brain, or any

other organ, such alterations are speedily produced as death will not entirely remove; and the second variety of delirium described by Fordyce is undoubtedly the result of inflammation, more or less intense, in this viscus. The symptoms indicate this, viz.: the throbbing of the temples, the redness of the eyes, the suffusion of the face, and the intellect remaining unrestored during the morning remission.

CRITICAL DAYS.

Fordyce appears to be at a great loss to account for the occurrence of what are called *critical days* in fever; and, after making some very lame attempts at an explanation, abandons it as one of the unsolved mysteries connected with this disease. Now, if I were to attempt an explanation, I would do it precisely as I should the appearance of *ghosts:* that is, by denying their existence except in the imagination of those who pretend to have seen them. The mere statement of the days supposed to be critical by those who contend for their existence is proof enough of their non-existence. Hippocrates and others designate them as follows: The fifth, sixth, seventh, ninth, eleventh, thirteenth, fourteenth, seventeenth, twentieth, and thirty-first. These are the *regular* critical days; then there are enumerated others which are called spurious critical days, as the eighth, tenth, and eleventh, etc. This is much like some of the almanacs that make prognostications of the weather: they will say that "rain, more or less, may be expected on the third, tenth, seventeenth, and twenty-fourth of this month; the day before, or the day after;" so that if it rains at all, it will come with a good deal of certainty upon one of those days. But the sticklers for critical days have left even less chance of a failure, if the fever yields at all, for they have embraced nearly the whole time consumed by an ordinary case of continued fever, from the period of its full development to its usual period of termination.

Now all contagious fevers, we all admit, naturally run through certain stages—which stages consume nearly the same time in all cases: the duration of these fevers is,

therefore, quite uniform; but this kind of termination is not what is meant by *crisis*, and therefore the usual days on which these fevers terminate cannot be called critical days. If a case of small-pox were to terminate suddenly in convalescence on the third or fourth day upon the occurrence of a hemorrhage, sweat, or diarrhœa, these discharges would be considered the cause of the sudden breaking up of the disease, and hence would be called critical discharges; and if it were perceived that such critical discharges were more apt to take place on particular days, these days might be properly called critical; but the occurrence of these discharges in the course of contagious or self-limited diseases has never been known to suspend the disease unless by causing death; hence there are no critical days recognized as applying to that class of fevers.

But other forms of fever, particularly those caused by malaria, of which common intermittents are a familiar example, seem to have no very definite period to run: if left to take their own course, they will continue until the powers of the system either sink under their influence, or reäct and arise above them, breaking the chain of morbid action which sustained them, or in which they consist. Now, whenever the vital forces obtain this ascendency, either by their own inherent power, or aided by appropriate assistance, then the various secretory organs at once resume their functions, and a restoration of the usual discharges of excrementitious matter takes place of course, and generally in greater quantity than in health: because, first, the vital powers have obtained the supremacy by *reäction*, and this reäction generally will go beyond the natural standard; and, secondly, there is more excrementitious matter to be eliminated than usual, and therefore the same amount of vital action will throw off a larger amount of appropriate secretions immediately upon the breaking up of a case of fever than in health. But is the return of these organs to their duty the *cause* of commencing convalescence, or is it the *result* of some anterior change, and only the effect of that change, and therefore not the prime cause of convalescence, but only a sign of its commencement? Undoubt-

edly it is the latter. These secretions can be and are often set up under the influence of powerful remedies addressed immediately to the sensibility of these organs, but convalescence does not, as a matter of course, follow: on the contrary, the general powers of the system are often materially prostrated by their action, and the disease left still remaining in all its stubbornness. No discharge can therefore be a critical one in the sense in which that word has been generally understood, that is, that the discharge itself carries off the disease, either by eliminating the *peccant matter* of the ancient humoralists, or by giving vent to the black blood of the modern humoralists, or in any other way, corresponding with any other theory. And yet these discharges are critical in another and more appropriate sense: they indicate that a *crisis* has arrived, when the powers of the system have triumphed over and removed the *condition* in which the febrile movement commenced, and by which it was continued. If this error with regard to critical discharges had been a harmless one, it would not have been dwelt upon so lengthily here; but out of it have grown most of the errors in practice by which this formidable family of disease have peopled the nations of the dead much faster than they would have done under the influence of treatment directed by a more enlightened view of the subject, or, perhaps, if left to run their course without the intervention of any treatment. But what is the change which takes place in the *condition* of the system which gives rise to these discharges that may be called *critical*, because indicating that a favorable *crisis* has arrived in the disease? It must be the removal of *that* which checked or suspended these secretions during the continuance of the febrile movement. In another place I have endeavored to prove that general capillary debility is the condition produced by the anterior causes of fever, out of which all the subsequent phenomena arise; and that without this condition there can be no such thing produced as the febrile movement. Now, a general capillary reäction is exactly what precedes and gives rise to general secretory action. When nature cures a fever, she does it precisely in this way: the remote cause

either ceases to act upon the nervous system, or the nerves cease to be impressed by it, and the nervous disturbance gradually subsides, and nervous power gradually increases until an amount is sent to the general capillary system sufficient to overcome the torpor, debility, or want of action in them, which has been the cause of their dilatation, congestion, and slowness of circulation, from which the scanty, depraved, or suspended secretions, and all the other concomitants of fever, have proceeded. Now it is plain enough that as soon as this is effected—as soon as the capillaries are permanently aroused to action, then, as a consequence, the secretions will all be again set up, and all the other phenomena which arose from this common cause will also disappear. Hence, quieting nervous disturbance, increasing nervous power, and exciting capillary action, should be the grand objects of every effort to break up the febrile movement.

HOW AN INFLAMMATION MAY CURE A FEVER.

Fordyce has observed that an inflammation, coming on spontaneously, or purposely set up in some part not essential to life, during the progress of a fever, sometimes arrests the febrile movement, but is wholly unable to tell how this beneficial effect is brought about. He very properly discards the notion that the cause of fever is attracted by the inflammation, and through the medium of the suppurative process disappears from the system; neither can he allow that it is done upon the principle of revulsion. To my mind, the *modus operandi* of local inflammation in curing fever is just as plain as that of any other agency. It acts precisely in the manner of every other successful means—viz., by capillary stimulation; the nervous excitement produced by the inflammation, by being conveyed to the brain and spinal marrow, and thence by the medium of the nerves sent out through the whole system, may, when the capillary action is not very great, excite them sufficiently to bring them up to the healthy standard; and these being once set in motion, the phenomena of fever will as certainly subside as will the waters of a mill-pond when the floodgate is raised. But inflammation, in order to be beneficial,

must not be set up in a very vital part, or be very extensive in parts less vital, or the nervous impression will be so powerful as to produce depression of nervous power in place of excitement; hence we perceive the depressing influence of active inflammation in the stomach, peritoneum, etc.; and hence, also, very large blisters applied to children, or adults of a highly nervous temperament, sometimes produce fatal nervous collapse. An inflammation, in order to be beneficial, therefore, must not be intense enough to create nervous *disturbance*, or extensive enough to produce nervous *exhaustion*, but just sufficient to occasion a gentle nervous *excitement*. It is, therefore, improper to blister while nervous excitement is high; and it is unavailing or pernicious to blister when the nervous power is very low and capillary debility profound; for then it will either not produce any sensation, and, consequently, no reflex action, and therefore do no good; or it may produce a powerful *sensation*, and occasion great nervous disturbance, and yet be wholly inadequate to arouse the torpid capillaries, and the excitement consequently occasion a further exhaustion of nervous power. We often meet with this condition of the system, particularly in cholera, congestive fever, and in profuse hemorrhage: capillary action seems to be wholly suspended in the surface and in the extremities—they are cold and shrunken, and of a leaden or purple hue; but yet sensibility is at its highest point of exaltation; the ordinary warmth of a healthy person's hand often occasions an insufferable sensation of heat; sinapisms are intolerable; and a blister at this time will prove the cause of most intense agony, and aid greatly in deepening the collapse. I was once called to a gentleman who was laboring under a severe attack of cholera; I found him verging into collapse when I arrived, but by the use of judicious means, or by the powers of nature, his disease was kept in check more than ten hours. At this time two other physicians arrived, and upon consultation it was agreed to try the effect of a blanket wrung out of hot water and wrapped around his person. I did not approve the measure, but as I had exhausted my resources and had obtained nothing more

than a truce, the enemy still holding entire possession of the citadel, I could not reasonably object to a measure which two intelligent physicians thought would increase the man's chance for life. The measure was therefore carried into operation; but I shall never forget the awful expression of agony which the hot blanket occasioned. His flesh was as cold as marble when the warmth was applied; but, notwithstanding the heat was not greater than was quite bearable to my hand, the patient complained as if it had been red-hot coals of fire. But he was not destined to endure long. A scream, a flounce or two from side to side, a few moments of trembling, a gasp as from suffocation, and all was still: the blast had been too strong; the taper was blown out.

HOW DO CONTAGIOUS DISEASES SECURE IMMUNITY FROM THE DISEASE THEREAFTER?

A certain class of diseases usually considered contagious, it is known, very rarely are produced a second time in full force in the same person. Many conjectures have been indulged in with respect to the cause of exemption. A learned professor supposes it may be that the vital sensibility which is possessed by the mouths of all the capillaries which afford ingress into the system, and which is placed there for the purpose of enabling these vessels to choose what is proper to enter the circulation, and refuse that which would prove deleterious, may be off their guard one time, and allow this subtle enemy to enter; but having been once caused to suffer severely by this mistake, they can never be deceived again by the same agent. But this guarding sentinel, whose office it has been supposed is to protect the avenues to the circulation from hurtful intruders, is itself but a figment of the brain, having no existence anywhere but in the imagination. Of this we have the most positive evidence, for we continually meet with instances in which the most hurtful matters are actually taken up by the absorbents. It appears that there is no limit to absorption, except that arising from the insolubility of substances and their acrid qualities. Very pungent or irritat-

ing matters cannot be absorbed, because they either stimulate the absorbent vessels so intensely as to cause too great a contraction to admit of their ingress, or the impression is so powerful as to paralyze them and suspend all action; and of course all absorption ceases until a return of vital energy takes place. The only conditions therefore that are necessary to insure the absorption of the most deadly poison as readily as the most healthful nutriment are, that it be soluble in water or the juices of the chylopoetic organs, if introduced by the mouth, and that it possess no powerfully stimulating or irritating properties; or, if it be a gas, that it be mixed sufficiently with the atmospheric air to render it respirable.

But we not only have evidence that the poison of contagion *might* be absorbed a second time, but proof positive that it often *is*. It is well known that persons who have had small-pox, by being afterwards exposed to the contagion, often take it in a modified form, and, consequently, the poison must have obtained ingress into the system; and this is rendered more certain by the fact that unprotected persons have taken the true variolous disease by coming in contact with one laboring under it in the varioloid form. Exemption is not therefore obtained because the poison cannot get into the system. The only good reason of which I can conceive why persons will ordinarily take these diseases but once is, that the poison which causes them is a narcotic stimulant. We know that some poisons of that class will very rarely fully impress the nervous system more than once. Take tobacco, for example: few persons who have acquired the habit of chewing this weed but have a vivid recollection of the horrible sickness and nervous prostration which followed their first initiatory effort at using it. But though a second attempt, perhaps, was not made until years afterwards, yet no violent effects followed. I had a personal acquaintance with a gentleman (a distinguished divine) who, from motives of propriety, discontinued the use of tobacco after having been a constant user for some years, and continued this abstinence for over twenty years; but, being attacked with a dropsical disease, his physician

advised him to resume the use of it, and he informed me that he used as much the first day of recommencement as he had been in the habit of using when he left off the practice, and that it affected him *no more* than formerly. The same thing is true of opium and alcoholic drinks, but not to the same extent. A full impression, amounting to complete intoxication, cannot be reproduced but by increasing the dose taken. The very same amount of whiskey which will throw a novice upon his back, may be repeated a few days subsequently, and will hardly make him stagger; and if often repeated, will at last scarcely affect him at all. It is just so with the poison of contagion. The first exposure to small-pox will produce very violent effects; a second will occasion a much milder effect; and perhaps the impression of the third will not be appreciated. But all contagious diseases are not preservative against subsequent attacks; and it will be observed that those which are not, make their first impression on some *external* part, and are therefore not of the narcotic kind, are not addressed to the nervous centres, and therefore one attack gives no security against a second.

DOES THE CONTINUED ACTION OF THE REMOTE CAUSE, AFTER THE OCCURRENCE OF FEVER, INCREASE ITS INTENSITY OR INTERFERE WITH ITS CURE?

Fordyce thinks it does not; but, with all due deference to the opinion of that correct thinker and accurate observer, I must differ with him in this conclusion, and for the following reasons: Every physician who has had a large country practice, embracing localities differing materially in their aptitude for generating malaria, could not have failed to observe that those cases of fever which occurred in the most malarious districts, and which remained there during the attack, were much harder to manage, and more apt to relapse, than such as happened to be removed to some friend's house in order to be nursed, who lived in a healthier vicinity. I resided for some years in McConnelsville, on the Muskingum river, in Ohio, and there enjoyed a fine opportunity for witnessing examples of the advantage of re-

moving from a sickly to a healthy locality, after the accession of an attack of fever. The country on each side of the river is high, broken, and well watered; the banks of the river high, and its current rapid, so that it would seem that very little malaria ought to have been generated; and I suppose there was not much formed in that particular region. But this stream heads up in a very rich, flat, marshy country, where all the materials for producing malaria abound, and miasmatic diseases are rife almost every year. I said that the Muskingum had a rapid current, but there was a great difference in its rapidity at different points: for a mile, or perhaps several miles, it was very gentle, and then for a shorter distance it was exceedingly rapid: (I speak in the past tense, for at present all parts are alike, the river having been dammed so as to produce slack-water navigation.) At the time I lived there, there were many salt-works in operation along the river, which gave employment to a great number of hands; who, added to other inhabitants, made the valley of the river quite populous. Now, those who worked or resided on the bank opposite to where the water ran gently, very rarely became sick; but fevers were exceedingly common among those who occupied a position opposite the rapids; and especially after a rise of water succeeding a hot, dry spell of weather. As many of the operatives at the salt-works were young men whose relatives lived among the adjacent hills, it was very common to have them removed there when taken sick; and I discovered a very marked difference in the stubbornness of the disease in those who remained, and those who "fled to the mountains;" and relapses were very common among the former, and rare among the latter. And here I would call attention to a fact with regard to malaria that I have not seen noticed—that is, that it may be absorbed by or mingle with water, and be carried by the current a long distance, and then set free by agitation and become exceedingly active. But to return to the subject, that the cause of disease by continuing to act upon the system will increase the violence of a fever, and invite relapses: Some years since, while practicing in Wilson county, I was called to

attend on a family which resided near an extensive mill-pond on Round Lick Creek: one after another was attacked, and all proved exceedingly intractable to the influence of remedies, and all suffered frequent relapses, until it became quite evident that no effort I could make would save them from fatal prostration, if they remained under the depressing influence of that malarious atmosphere. I accordingly recommended a change of location, although three of the family were then not able to turn themselves in bed; but they were lifted on their beds into a wagon, and conveyed about four miles, to the residence of the gentleman's father, which was situated in a locality proverbially clear of malaria. The change was not only profitable, but remarkable; and, with but very little further medication, all rapidly recovered. I could narrate many other examples equally as striking as the above, which have come under my own observation; but every observer can doubtless furnish examples from his own memory which will be amply sufficient to prove my position.

But is this true of the action of the remote cause of all other fevers? Not perhaps to the same extent. In epidemic fevers it is equally true; but in contagious fevers it is not. In these, the remote cause, after having once set up the chain of morbid action which characterizes the peculiar disease, cannot, by continuing to act, set up a new series of morbid movements; but it can do this: it can exert a depressing influence upon the system, which will lessen its ability to successfully bear up under the disease while it runs its course. It appears that during the progress of every febrile disease there is some kind of emanation proceeds from the person of the patient, which, if it does not excite the same identical disease in another, will at least prove a means of aggravating any other form of fever under which the individual may be laboring at the time. A number of fever patients, therefore, in the same house, will stand a less chance of recovery than if they were each in a different house, although no two may have the same form of fever. This is the only rational cause that can be assigned for a greater mortality in hospitals

than in private practice. It will not do to say that other circumstances are less favorable; that there is less ventilation, fewer comforts, more dirt, inferior nursing, or a greater lack of medical skill; for the very reverse of all this is generally true.

Every physician who does a general practice in a city, knows that a large per cent. of his patients are among the poor and degraded, where there is neither good air, good nursing, nor good food, but plenty of filth, and very few comforts of any kind; yet even among these he will save a greater per cent. of his patients than is saved in the best-regulated hospitals. The reason is, that in the hospital there are many fever patients, every one of whom is continually throwing off a peculiar malaria to poison the atmosphere, and depress the nervous power, so as to cripple the recuperative energies of the system, making it more difficult to struggle with the particular disease under which it is laboring. It is therefore evident that the remote cause of fever does continue to act injuriously after the fever is set up; and it is therefore important to the safe recovery of the patient, and as a means of lessening the chances of those who are with him of taking the disease, that the remote cause be destroyed, if indeed it can be. And from a careful observation of passing events since I introduced my present plan of treating fevers, I have perceived sufficient evidence to convince me that this plan destroys or neutralizes the remote cause of fevers, as the very first step towards its cure.

My attention was first directed to this subject while engaged in treating dysentery, some years since, on the Caney Fork of the Cumberland river. That disease was highly epidemic at the time within certain bounds, not spreading all over the country uniformly and at once, but commencing at certain points, and extending in certain directions. The epidemic influence was so intense that, as the cause seemed to extend, nearly every inhabitant was brought under its control, and one after another of a family were stricken down, until nearly every one had an attack. But I discovered that where I was called to take charge of the new

cases in a family, and put them upon the plan of treatment which I believed was calculated to not only control the disease, but also destroy the remote cause, it rarely happened that any other new case occurred in the family, and no new attack took place in any case in which I was called to treat the *first* patient that sickened with the disease.

Since that time, I have seen the use of the same means followed by the same results with regard to typhoid fever. I recollect of no case in which a second attack has happened in the same family under my management. In a conversation held with a medical student a short time since upon the subject, he observed that if what I said was true, it would curtail the whole amount of medical practice materially; that, by shortening the usual period of treating fevers more than one-half, and then preventing, in a good measure, some of the most troublesome varieties from extending, it would diminish the fever practice to a ruinous extent to the physician. Well, let it be so. The people, I suspect, would hardly be willing to suffer sickness merely to accommodate physicians; and then it will work no real loss to the practitioner himself, even to lose his calling entirely; for I hold it to be certain, that any man who has intelligence, judgment, and industry sufficient to constitute him a good physician, can make more *money* at almost any thing else to which he may choose to devote his energies. I have known many physicians who, after scuffling for years with poverty in the profession, at length turn their attention to something else, and make a rise in the world in a short time. But whether it increase or diminish the profits of the profession, will never operate as a reason for its rejection or adoption—this will be settled by the evidence of its *truth;* for to the honor of the profession be it said, it has never been backward in adopting every means which gave good promise of curtailing human misery. But I have somewhat wandered from the subject. I think I have given good reasons for believing that the continued action of the remote cause of fever does render that disease difficult to cure, and more liable to relapse. These reasons, in brief, are, that malarious fevers do not yield as readily to remedies while

the patient remains in the infected district, as when removed to a locality where the poison does not exist, and that relapses are much more common under the former than under the latter circumstances; that in hospital practice, where the apparent circumstances are much better than in pauper practice in a city, the mortality is generally larger, showing that the malaria generated by fever patients operates injuriously to the recovery of others, when a number are confined within the same walls. I will add, that even other than fever patients feel the influence of this malaria, when confined in the same atmosphere with a number of fever patients—ulcers are difficult to heal, bones unite tardily, the effects of capital surgical operations are more fatal, etc., etc.

And, further, that aborting febrile diseases, or breaking them up in their earlier stages, lessens the liability of those around them to take the disease.

HOW DOES QUININE CURE INTERMITTENTS?

It does it, either by destroying the malaria or by neutralizing its power, or by removing the condition of the system produced by the action of the malaria, from which the fever arises. That it does not act in either of the first ways mentioned is proven by the fact that it does not always succeed. For it is evident that if it is capable of destroying the malaria, or so changing its nature as to deprive it of that quality which impresses the system injuriously, it must do it always. Whether malaria be a poisonous gas or organized existence—whether vegetable, animal, or chemical—this would be the case; any substance which unites with another chemically, so as to neutralize it or change its nature, will always act thus; and any thing which will destroy the life of any particular species of animal or vegetable existence will do it every time, if given in sufficient quantity or applied in sufficient force. It follows, that if quinine destroyed the cause of fever, or was an antidote to the effects of that poison, it would never fail in its operation. But it does fail occasionally, under the best management; and even when it succeeds in breaking up the disease,

it often returns again, and after the quinine is repeated a few times, it generally wholly loses its power: this would not be the case if it acted as a neutralizing chemical agent, or if it acted as a poison to the organic existences which compose malaria. It therefore does not act by destroying the malaria, or by neutralizing it. It remains, then, that it does act by removing the condition of the system produced by the malaria, out of which the fever arises, or in which it consists, for there is no other conceivable mode by which it can act. But the evidence of its acting in this way does not rest merely upon the fact that we cannot explain its *modus operandi* in any other way, but is based upon its perceptible effects upon the system, and the analogy of these effects with those produced by other remedies, the mode of action of which is well understood. Now what are the sensible effects of quinine? I once took five grains of this medicine, when in good health, on purpose to ascertain, if possible, its mode of action on the system, and I found its sensible effect to be that of a pure nervous stimulant. It produced that state of the system, in a high degree, which we call *nervousness*—a sense of agitation, slight quiverings of the muscles, some intolerance of light, increased sensibility to sounds; and even imaginary sounds were heard, as of distant ringing of bells. Besides these, there was wakefulness, and a very uncomfortable restlessness; and these sensations remained in force for over twenty-four hours. The reason such a moderate dose produced so much effect was, that there was no nervous depression in my system to overcome, as there is in fever; on the contrary, I am naturally of a nervous temperament, and easily impressed by all nervous stimulants. I have not given this description of the sensations produced by quinine in my own person because they were peculiar, but because they are exactly what are described as arising from the influence of the medicine by others, who have taken it to break up a chill; showing that its effects upon the healthy orgasm are the very same which it produces in disease; and it may be noted, that if it fails to produce these, its natural effects, in some considerable degree, it also fails in effecting the object

for which it is administered. But quinine not only acts like other nervous stimulants, but other nervous stimulants act like it, that is, they accomplish the same object. It is well known that opium will prevent a chill, with almost as much certainty as quinine; so will ardent spirits, so will the *cold douche*, so will a powerful mental excitement. These, it is true, are not so permanent in their effects as quinine—the reason for which will be given presently—but, as far as their sensible effects are concerned, they act very similarly: all produce an agitation of the nervous system, muscular tremors, wakefulness, giddiness of the head, and an exaltation of the senses. I mean they do these when applied in a certain force—all may operate with such overwhelming power as to suspend sensation, but all when operating with moderate power, like quinine, increase nervous power, and exalt sensibility. In what, then, consists the superior power of quinine over other nervous stimulants in breaking up intermittent fever? It is because it is not only a powerful nervous stimulant, but it is a permanent one, and nothing else. It is not evanescent in its effects, like the *cold douche* and mental excitement, nor does it possess, like opium and other medicines of that class, sedative or depressing properties, by which, after exciting, they depress nervous power, thereby increasing the nervous debility, which causes a chill: quinine, by bringing about a high state of nervous excitement, and continuing it for a considerable time, in consequence of the increased amount of nervous power which is sent out to the whole system, often causes such a perfect reäction in the capillary vessels, that they do not relapse again into torpor, and consequently a permanent cure of the fever is effected. But sometimes the excitement produced by quinine amounts to actual nervous disturbance, succeeded by depression, in which case the capillary debility is increased, and then its use proves an entire failure. Taking this view of the subject, I am in the habit of giving but a moderate dose of quinine, just enough to impress the nervous system, say from four to six grains, and at the same time give my *fever syrup*, to keep down nervous disturbance, and to increase capillary action.

In this way, I have generally succeeded in breaking up intermittent fever with a single moderate dose of quinine; for if the syrup is continued for several days after the chill is broken, there is little danger of its returning. This mode of treating intermittents has several advantages: it is more certain, it produces no unpleasant effects, and it is much cheaper.

MODUS OPERANDI OF TOPICAL [LOCAL] REMEDIES.

Fordyce, (p. 304,) in speaking of the known benefits which often arise from cupping or leeching the temples, when a patient is suffering in the head, or in delirium during fever, observes, that it cannot be accounted for by the mere amount of blood drawn from the general circulation, or from any direct relief to the vessels immediately congested, as they are situated within the brain, and there is no very intimate connection between the internal and external circulation of the head; hence he adds: "The reason why such topical evacuations by bleeding carry off or diminish the delirium or pain in the head, or even sometimes the whole fever, is consequently wholly unknown to the author." The same difficulty will present itself in accounting for the beneficial effects of other topical means—such as dry-cupping, sinapisms, stimulating liniments, blisters, etc. These often prove as beneficial as drawing a little blood by cups or leeches, and they undoubtedly operate upon the same principle—all act by producing a stimulant effect through the medium of nervous connection or association. Distant parts of the body are known to be closely associated by nervous influence—the *uterus* and the *mammæ*, [breasts,] the *parotid gland* and the *testes*, mucous surfaces and their external opening; and all internal parts with the external surface immediately opposite. Some of these associations, among which is the last, are not owing to *direct* nervous communication, but are dependent upon that connection which exists between the nerves of the associated parts in the brain, spinal marrow, or some other centre of nervous influence, as the great plexus and ganglia. Why there should be a close nervous association between

the skin and the deep-seated parts immediately under it, we cannot tell, except that it was so arranged by our beneficent Creator for the express purpose of enabling us to produce remedial effects upon parts beyond our reach, by applications addressed to those parts within our reach. This appears to be a sufficient reason for the association, and we can perceive no other, as these parts are not at all concerned with each other in performing their ordinary functions. The mode of operation of topical remedies appears, then, to be as follows: a blister, for example, is applied over the seat of an internal inflammation; it acts as a powerful stimulus to the cutaneous capillaries, and the impression, being conveyed by the nerves of organic life, with which the part is supplied, to the nervous centre from which they take their rise, is sent by reflex action along the same kind of nerves to the deep-seated part, and becomes a stimulus to its capillaries and arouses them to healthy action. I say nerves of *organic life* in the above connection, to distinguish them from nerves of sensation, for these appear to have little or nothing to do with the beneficial operation of a blister in relieving deep-seated inflammation or congestion. This is proven, first, by the fact that blisters often draw well without producing any sensation at all, and yet produce their full remedial effect; and, secondly, blisters often occasion intense sensation while producing but very slight capillary excitement in the part, and without any benefit to the internal inflammation or congestion. We are all familiar with examples of this kind in conditions of great capillary debility, connected with a high state of nervous sensibility, as in cholera, congestive chills, etc. My observations have led me to the conclusion, that the benefit derived from a blister, or any other stimulating topical remedy, is always in an inverse ratio to the suffering it occasions the patient; and acting upon this idea, I am in the habit, when I think it best to employ them in a case in which the sensibility of the nerves of sensation is exalted, of subduing it as much as possible by opiates or anodynes; for it appears that the same kind of impression which is transmitted to the nervous centre, is

sent, by reflex action, to the associating organ or part. Hence, if it be increased *sensation* which predominates, the only effect of the local application is to increase the *sensibility* of the associating part, and, consequently, augment the *suffering;* but if the matter is so managed that but little impression is made by the topical stimulant upon the nerves of sensation, and capillary excitement greatly preponderates, then the effect upon the internal inflammation is most strikingly beneficial; the capillaries of the part being roused to action, relieving the engorgement which occasioned the nervous suffering and other mischiefs referable to capillary distension, without any expense of suffering to the patient, or any danger of increasing the general morbid action by getting up an extensive nervous disturbance.

It was said above, that the same impression which is made upon any one part by a topical application, will by reflex action be also produced in the associating part. This will at once explain the operation of every kind of remedy of that class. It is in this way that a soothing poultice to the abdomen relieves pain or spasm in the bowels; in this way chloroform liniment, applied to the surface of limbs tortured with the aches of the first stage of fever, will allay the distress in the bones, sinews, and muscles, as by enchantment; it is in this way that blisters or strong rubefacients, applied to the *breasts* of a female suffering from suppressed menstruation, will excite the capillaries of the *uterus*, and cause it to perform its function; and in this way an anodyne poultice, applied to the same parts, will transmit its soothing effects to the womb, and quiet the pains attendant on difficult menstruation.

HOW DO SPIRITS OF TURPENTINE ACT BENEFICIALLY IN TYPHOID FEVER?

So many intelligent physicians have given their united testimony in favor of the use of turpentine in typhoid fever, that we are compelled to believe that it does possess some useful properties, suitable to control this particular form of diseased action, or at least some of its stages.

But writers differ widely as to the time of administering it, and the amount prescribed; but most of them agree in giving it in the second stage of the disease, when there is considerable redness of the tongue, irritability of the bowels, and tenderness of the abdomen, in small doses; and more freely in the third stage, when there is low delirium, subsultus tendinum, [jerking of the leaders,] etc. My views of the nature of the *febrile movement* in general, and the condition of the nervous system in particular, in this disease, as well as my experience, would lead me to prescribe this remedy, under certain restrictions, in all its stages. Before adopting my present mode of practice, I relied more upon this than on any other remedy, and yet occasionally prescribe it, especially when called to a case which has already run into the second stage; it therefore is pertinent that I inform the reader with what view I administer it, and what advantage I expect to derive from it; for I protest against giving any thing in disease for which I cannot assign a good reason.

In another part of this work, I have said that turpentine enters the circulation and acts as a direct stimulant to the capillaries in general, and to those of the kidneys in particular; but it does more than this: it is a powerful stimulus to the nervous centres, and greatly increases general innervation. In typhoid fever, nervous power is deficient, as well as capillary action too low; therefore we can see at once that turpentine may be used in it with great advantage. But it does still more: in this fever, there is always more or less intestinal irritation, and often inflammation; now we know, from microscopic observation, that the capillaries are torpid in these states of disease, and observation has proven that turpentine, as a local application, is an excellent excitant to bring up the action of the capillaries to the healthy standard; hence it has become a popular application to burns and sores. Turpentine, then, acts beneficially in typhoid fever in the following ways:

First, it tends to relieve the local irritation or inflammation in the alimentary canal. But for this purpose it should not be given undiluted, or even in water, as, by not mixing

with the water, it will still strike the walls of the stomach in its full strength, and injure its coats; it should always be combined with syrup, or mucilage, or olive oil, so as to cover its acrimony.

The second indication for which it may be given, is to excite general capillary action. That it has this effect, in a very considerable degree, is evident from the improved appearance of the surface which often follows its exhibition in very low conditions of the system, and the general restoration of the secretory action which we also often see follow its administration, known by the tongue and mouth losing their dryness, the skin becoming more pliant, and by a more abundant flow of urine. For this purpose, it should be given in small doses, largely diluted with some bland material, which will favor its absorption; for if given in too large doses, and especially if undiluted, it will irritate the absorbent vessels so as to cause their mouths to contract and prevent absorption, or, if it enters the circulation in too much force, it may over-stimulate the kidneys, it being specifically directed to these organs. The indiscriminate and almost reckless use that has of late years been made of this remedy in typhoid fever and dysentery, has led to many cases of incurable debility in the kidneys, occasioned by over-stimulation; so that we should recollect, that while we are curing a man of an acute disease, we will not lay him under much obligation to us if we entail on him some irremediable injury, and especially when all the advantages of the remedy can be obtained without any of its disadvantages. But turpentine, in the third place, acts upon the nervous system. That it does, is evident from its beneficial effects in low stages of fever, in quieting nervous restlessness, subduing subsultus tendinum, and relieving low, muttering delirium. That it is especially a *nerve stimulant* and not a *sedative*, is proven by its increasing nervous disturbance, headache, and delirium, when these arise from over-action or excitement. We, therefore, should be guarded in its administration; withholding it altogether when there is evidence of over-action in the nervous centres; and even in cases of under-action we should be careful not to impress

the nervous centres too powerfully, or we may exhaust the vital impressibility and defeat our purpose, or we may produce so much nervous reäction as to cause nervous disturbance, which some, not being able to detect, have considered a good reason for pushing the remedy still farther, until, if the patients survived the shock, they were permanently injured by having partial paralysis or other forms of nervous lesion entailed on them for life.

WHY DO MERCURIALS ACT INJURIOUSLY IN TYPHOID FEVER?

I answer, because they have a tendency to produce the *typhoid condition.*

Now in what does the typhoid condition consist? That is, what distinguishes typhoid from other fevers? It most assuredly is the want of nervous power, manifested in many ways not necessary here to enumerate, but in no way more strikingly than by a deficiency of fibrin in the blood. This material seems to be the most difficult to elaborate of any of the constituents of the system—the very highest effort of vital action is required to produce it; hence, in all cases in which nervous power is low, fibrin is found to be deficient in the blood; and in all cases in which fibrin is deficient, the repairing or healing process does not take place. Whether this is for want of fibrin, or from the cause which produces a want of fibrin, viz., a low state of vital action, is not known. From this cause, blisters drawn in an advanced stage of typhoid fever often refuse to heal; and from this cause ulcerations so often prove troublesome in the intestinal coats in typhoid fever. Dr. T. L. Maddin, of this city, read a paper before the State Medical Society in the spring of 1856, which was published in the May number of the Nashville Journal of Medicine and Surgery, in which he gave, as I believe, the true pathology of these ulcerations, viz.: that Peyer's and the solitary glands of the intestines have a peculiar construction, being nothing more than minute vesicles formed under the epithelium [scarf-skin] of the bowels, having no orifices, and bursting when they become distended, and so causing a minute lesion of continuity in the epithelium; repaired, it is true, with very

slight effort in health, but which, in the typhoid condition, when nervous power is low, and the reparative effort at zero, serves as a beginning-point for the destructive process of ulceration. And as these glands or vesicles, when they discharge their contents, become obliterated in the natural condition of the system, and others form in their place, to become full and burst in their turn, keeping up a regular succession, so in typhoid fever it is found that a like succession of ulcers is formed—*post mortems* [examinations after death] having revealed the fact that ulcers in every stage of development were present from the size of a mustard-seed to that of a hen's egg, and fully perforating the coats of the bowel, the reparative process being entirely suspended. Now, what are the facts with regard to the influence of the constitutional effects of mercury? Does not observation prove that it does the same thing? The best writers acknowledge that it lessens nervous power; it also occasions a loss of fibrin in the blood, and cripples the recuperative powers so that the reparative process is suspended, and ulcers will not heal. It is true that, when the inflammatory process is set up in the salivary glands, an amount of excitement is conveyed to the nervous centres sufficient to *whip up* a forced state of nervous power adequate to manufacture fibrin, but not out of the *raw material;* not from nutriment taken in, but by breaking down the tissues of the body and appropriating the fibrin which entered into them, throwing off the albumen and salts at the mouth. And sapient physicians have resorted to this *destructive* process to force a little fibrin into the circulation, but oftener killed their patients in trying. How much more philosophical it is to go to work with such means as will increase nervous power and restore capillary action, so that fibrin may be manufactured from appropriate food!

The inquiry will naturally arise, Why do so many really intelligent physicians persist in giving mercurials in typhoid fever? One reason is, that they were *taught* to give it—all the fathers gave it: Cullen, Rush, Chapman, Cooke, and all the lesser lights, relied on it as *the* remedy in fevers in general. Another reason is, that in most fevers it actually

does do good under proper management, and physicians are slow to believe that a remedy which acts beneficially in other fevers will act the reverse in this.

Mercurials possess one property of action which, so far as it goes, renders them exceedingly appropriate in fevers: they do increase capillary action; given in the proper manner, no remedies can act finer in this respect; hence they excite all the secretions; and those who look no farther for the source of mischief in disease than the most obvious effects, naturally enough suppose that the suspension of secretions is the *disease*, and to restore *them* is to cure it. But if they would recollect that it is the want of nervous power that has occasioned capillary debility, and this in turn the diminished secretion, they would never resort to a nervous debilitant to remove the difficulty, but would rather call into requisition such generators of nervous power as turpentine, camphor, ammonia, etc., but especially sassafras, piperin, and valerian. A distinguished physician who witnessed the happy manner in which these articles control typhoid fever, (having watched the progress of a case under my treatment,) inquired of me if it was not probable that the sassafras operated in the same way as turpentine, (he having great confidence in turpentine.) This conjecture was undoubtedly well founded: turpentine is a nervous stimulant, and so is sassafras; both increase nervous power, and in this way both are valuable remedies in typhoid fever; but the sassafras is preferable, because it is the best nervous stimulant, and because it never acts as a nervous irritant, as turpentine sometimes does, and never acts injuriously upon any of the organs, as turpentine occasionally does upon the kidneys; and then sassafras possesses the rare property of destroying or counteracting the effects of narcotics, and in this way prevents any further action of the remote cause, so that between it and turpentine and mercury the case stands this way:

Mercury increases capillary action and excites the secretions, but depresses nervous power, which is already deficient, and in this way increases the deficiency of fibrin, and destroys the recuperative powers so that the reparative

process cannot be set up, and the patient wears out, or destructive absorption perforates his bowels, and he dies suddenly from the contents entering the cavity of the abdomen.

Turpentine acts also as a capillary stimulant, and, in place of depressing, elevates nervous power, and thereby favors the production of fibrin, and aids the restorative efforts of the system, so that these lesions in the intestinal epithelium are healed, and the process of destructive absorption stayed. It is however liable to over-stimulate the nervous centres, get up nervous disturbance, produce over-action in the kidneys, and entail debility on those organs.

Sassafras does whatever the turpentine can do that is beneficial, and never does harm, so that it is to be preferred of the two, and, with the aid of piperin and valerian, will do pretty much all that is required to be done in typhoid or any other fever.

CHAPTER VI.

PARTICULAR FEVERS.

I WILL now take up the individual fevers, and point out the diagnostic symptoms of each, and the variations of treatment which I have found necessary in adapting my general plan of treatment to each variety and stage, and the various minor helps which serve to meet complications, remove annoyances, and increase the efficacy of the principal remedies; and will also give the treatment of the latest and best accredited authors, pointing out what I think objectionable, and then leave the reader at liberty to adopt that which he thinks most reasonable. And, as being the most important on account of its ranging over a wider territory, and being more intractable to the influence of common remedies, I will first take up

TYPHOID FEVER.

The forming stage of this fever is generally more protracted than any other. For many days, or even weeks, the patient is sensible of not being quite as well as usual; has less energy; less vivacity; a more capricious appetite; has some irregularity of the bowels; sleep more disturbed, and not so refreshing as usual; finally, pains strike him of a peculiar kind, often assuming the form of a crick in the neck, or aching of the head, and soreness about its junction with the neck. His feeling of discomfort gradually becomes more decided; and, although he is still often unable to refer his illness to any particular point, yet he is conscious of being very sick, but perhaps still mopes about for a few days longer, expecting every day to get better. Friends

frequently look upon it as an attack of common cold, and administer sweating remedies to throw it off; but although he perspires copiously, he is not at all relieved, and they next usually conclude to give a purgative to work the cold off by the bowels. This also operates with unusual power, and the bowels continue to run off with watery discharges long after the medicine has spent its force. By this time the patient is decidedly worse, and, if a negro, he covers himself up in bed, even should the weather be warm, and sleeps or is in a stupid condition, which might be easily mistaken for sullenness. Arouse him and ask him what is the matter, and he will probably say, *Nothing:* ask him why he is in bed then, and he will say he feels too weak to work; if he complains, and you inquire where his misery is, he will answer, All over. If a white man, he will probably be found sitting with the family, and will apologize for neglecting business upon so trivial an occasion; observes that he has felt "out of sorts" for several days. His pulse is little more frequent than natural, and the surface, especially of the body, a trifle too hot, and the extremities rather too cool; his countenance looks tired and expressionless; tongue furred, and unusually white, as though it lacked blood, or presents the hue of venous blood. Ask him if he has tenderness of the abdomen, and he will commonly say No; but upon making pressure just above the umbilicus, [navel,] or a little to the right, you will discover that he will flinch; pressure along the spine will commonly detect several points of tenderness; his chief complaint however is of *weakness*, which he attributes to the operation of the purgative, if he has taken one.

If the disease is suffered to progress, the giddiness of the head will be changed for severe pain, delirium, or stupor as from intoxication. There is now decided tenderness the whole length of the spine; the tenderness of the abdomen is also considerably increased, attended with more or less fulness; the heat of the trunk is augmented, and the pulse accelerated, and is small and wiry under the touch; tongue thickly coated in the middle, but rather clean at the edges, and of a deeper red; in putting it out it assumes a pointed

form with a slight elevation of the edges, and it will often quiver like a leaf in the wind. The tongue is not however red and pointed in every case; sometimes it is unusually white, as though it lacked blood, and is spread out much broader than natural. There is usually some diarrhœa; at least, if any purgative has been given, it has run off with watery discharges. The heat, though not generally so great in this fever as in some others, is more persistent, varying but little for many days together.

You who have ever seen a case of typhoid fever, will readily recognize the likeness I have drawn. Now what kind of lesion does this group of symptoms indicate? Do they not all point unmistakably to derangement of the nervous system, forcing the conclusion that this disease has its primary foundation in the disturbance of the nervous centres? Every characteristic manifestation of this fever from first to last indicates this, viz., weariness, lassitude, cramping pains, giddiness, the wry neck, the trembling tongue, the peculiar fretful pulse, the fitful alternations of heat and cold, and subsequently the flashes of fiery heat, the delirium, subsultus tendinum; and even the red tongue, the irritable bowels, and the rose-colored eruption, as I will show hereafter, all grow out of disturbance of the nervous centres, which disturbance is evidently the result of the action of the remote cause, as they precede local disturbances, and therefore cannot be *produced* by them. Hence this disease has often been known by the term *nervous fever*.

The capillary debility, and consequent engorgement, being more slowly produced in this than any other fever, the reäction is also more tardy in taking place, but, when set up, is proportionally more persistent, and the disease has therefore been called the "continued fever." The red tongue and intestinal irritation have claimed the attention of others, and they, taking these symptoms as indicating the seat of the disease to be in the stomach and bowels, have named it "enteric fever," or gastro-enteritis.

But these are by no means the first symptoms of the disease, but come on in its progress, and are therefore an

effect of some other lesion: they are not even peculiar to this disease, for we find them fully as prominent in other diseases known to be the result of great nervous disturbance, such as fever from dentition, [teething,] from intestinal worms, from painful or difficult menstruation, from conception, etc. Every one who has seen much disease has seen the red tongue, the irritable stomach and bowels, and the great impressibility of the system to the influence of medicine, as fully developed in these and kindred cases, known to arise from nervous disturbance, as they ever have in typhoid fever.

In the progress of this disease there often appears a peculiar eruption on the surface about the epigastrium, [pit of the stomach,] and also internally in the neighborhood of Peyer's glands, which has induced many to class it among the eruptive diseases, such as scarlatina and measles, and that, like them, it is contagious and self-limited. But we have many other examples of peculiar eruptions originating from great nervous disturbances, such as arise from over-doses of narcotic stimulants, poisonous fish, lobsters, mushrooms, etc.; and it is not unphilosophical to suppose that the eruption attending the true specific contagious diseases is the result of a similar cause, viz., that the remote cause of these diseases, whether animalcule or gaseous, is of the nature of a narcotic stimulant or nerve-poison, and the eruption is the consequence of the nervous disturbance. It will be perceived, therefore, that I do not deny that typhoid fever is an eruptive disease, or that it is contagious; all I contend for is, that it is the result of a narcotic poison, either organic or gaseous, acting upon the nervous centres.

I can offer very little upon the treatment of this disease, except what could be gathered from the observations which may be found upon this subject in the preceding pages; however, to bring the subject directly before the reader in a more condensed form, and enable him to understand my *manner* of using the principal remedies, and the particular *helps* which should be called in by way of meeting the various difficulties which present themselves, from time to

time, in the progress of a case of typhoid fever, I will now proceed to take up a case representing its most usual form, and give a kind of *programme* of my method of procedure.

All fevers, as I have before observed, are very similar in their inception; therefore, when I am called to see a case in the forming stage, I think it best not to decide what form I may have to treat. If interrogated upon the subject, I answer that the patient has either taken cold or is about to have some sort of fever, and that I cannot *name* it until it is further developed. In this stage, it is usually best to do very little; rest, mild drinks, and a gentle purgative are enough to prescribe. Therefore, when called to see a patient whom I find complaining of some headache, general muscular weakness, alternate sensations of cold and heat quickly succeeding each other, loss of appetite, etc., I have good reason to suspect typhoid fever, and proceed at once to prescribe the proper means for aborting it, viz.: a tablespoonful of fever syrup every two hours for an adult, and in proportion for a child; a warm mustard bath to the feet, and chloroform liniment or camphor and laudanum to the spine, and also to the stomach and bowels if there is any distress in that region, and direct quietness and the recumbent position. When I call the next day, I expect to find my patient sitting up, and, if a female, attending to her amusements or domestic duties, and to be greeted with, "Why, Doctor, you've come too late; I've got well; I was more scared than hurt; I feel as well as common to-day, etc."

But, as often occurs, the patient waits a day or two longer before applying for medical aid, and takes a dose of calomel or some other mercurial. I am now told that the *physic* "worked powerfully, and brought away more bile than you ever saw;" but upon making closer inquiry, or, what is better, by seeing the dejections, I find that the *bile* is nothing more than yellow water, presenting the appearance of an egg stirred up in a gallon of very thin gruel. I also find, too, that the patient feels generally worse: his headache has increased; more pain in the back; skin hotter; tongue covered with fine white fur, and is broader

than natural; abdomen is more tumid, and slightly tender to pressure; pulse more frequent; heat persistent. I am now satisfied that I have a real case of typhoid fever before me, and put him upon the treatment that was suggested for yesterday, with the addition of a poultice to the bowels. If called in still later, say a week from the first decided indisposition, I will find more heat of the skin; greater restlessness; headache unabated; confusion of ideas; talks wildly when dozing; tongue more coated in the middle, a little red at the edges and slightly contracted, and, on protruding it, I perceive a little quivering, as though its fibres were acting "one at a time."

If the case is neglected still a day or two longer, the tongue will be decidedly pointed, be a deeper red at the edges, and will perhaps tremble with a palsied motion or look rigid, with its tip turned upward. I now have a case which will do to record in my note-book, "A case of typhoid fever of five days' standing." Well, I should commence the treatment now just as I would have done at first, so far as giving the syrup is concerned. It would be *syrup* every two hours, liniment to the spine, poultice to the bowels, cold applications to the head, and sponge the limbs with warm soap-suds. On my next visit I should expect to find but little change of symptoms, for when this fever gets five to eight days' start, it will not yield in a few hours; it now seems to have the tenacity of life of the *snapping-turtle*, and, like it, will hold on to its grasp some time after its vitals are crushed. I should therefore feel contented to find my patient no worse: perhaps less headache; not quite so restless, and bowels not so excitable, etc. A very gradual, hardly perceptible improvement may be expected until the third or fourth day of treatment, when I should expect to find general evidence of improvement; the pulse, for example, about 90; skin much cooler; headache gone; sleep undisturbed; tongue not so red and pointed; but still no appetite, and no signs of increasing strength; perhaps the patient feels weaker, and will not believe that he is really any better. But I tell him he will be better to-morrow, and suggest some light diet, which I

direct to be taken with the punctuality of medicine. On the next day I expect to find a decided improvement in his appearance: his countenance looking bright; his skin filled out, and looking lively and glossy; his eye brighter; his tongue having lost some of its redness and assuming its natural shape, but yet trembling. He now inquires what he may be allowed to eat, and likely suggests some article that strikes his fancy. If the tone of the bowels has not been injured before I have taken charge of the case, and it has not been of more than five days' continuance, I usually permit the patient to have a little of any diet he may fancy, even fried chicken or broiled bacon. But if purgatives have been injudiciously used, or the fever is in its second week when I first see it, I know that the bowels have been so injured that the utmost care will be required during convalescence.

My usual form of administering the *syrup* is, to give it in twice its volume of water or milk. It should always be diluted with milk for infants and small children; and this is generally the best vehicle for giving it in fevers for all ages, the milk furnishing the means of sustaining the system, and the syrup securing its proper digestion and assimilation, thus preventing a loss of tone in the stomach or much prostration of general strength. But sometimes the syrup, given in any way, becomes repulsive to the stomach, which renders it imperative to devise some other form in which to administer the remedies. The following pill constitutes a good substitute: Recipe—Pulverized rhubarb, 30 grains; piperin, valerianated zinc, and extract of liquorice, each 10 grains; oil of sassafras, 20 drops; make 30 *pills*, each of which will be about equal to a tablespoonful of the *syrup*, and may be given at the same intervals. I often find it convenient and politic to substitute the pills for the syrup, even when the latter is taken kindly, so as to prevent the patient from becoming tired of taking the same thing. It is generally best to give the pills in the night, and the syrup during the day. When the medicine is given in the form of pills exclusively, I have thought its effect in breaking up the febrile movement was not quite so

potent as when given, at least part of the time, in the form of syrup. I never have a patient roused out of a quiet sleep to take medicine. As soon as convalescence is fairly set up, I make the intervals longer between the times of giving the medicine, making them three, four, and six hours, and finally ordering only a teaspoonful to be taken directly *after* eating each meal.

When called to take charge of a patient in an advanced stage of the disease, after active inflammation has been set up, I meet this complication with additional treatment. If of the brain, I apply cold applications to the head, and a blister to the back of the neck, letting it extend some way down between the shoulders. If of the bowels, I first poultice, or pour a stream of warm water for an hour or two upon the exposed surface, and then poultice; and if these means fail, I then apply a blister: I prefer a large one; the irritation produced by a small blister is usually transferred to the greater one beneath, making the disease worse by adding to it.

I pay no attention to the secretions of the liver, knowing that, when the remedies have set up general capillary action, those of the liver will also participate in the reäction, and healthy bile will be secreted; and also knowing that a forced effort of the liver, under the goadings of mercurials, will in no way aid me in breaking up the febrile movement. I therefore only watch for the return of healthy biliary secretions with the same solicitude that I do other secretions; viewing all of them not as a *cause*, but a *consequence* of commencing convalescence. If called in at an advanced period of typhoid fever, I can make no promise as to the time which the disease may then run; but if there are no serious inflammatory complications, I usually, even then, break up the febrile movement in four or five days, but convalescence is tedious.

I will now further illustrate my mode of managing typhoid fever, by detailing a number of cases treated by myself and others:

Case 1. August 30th, 1853.—A boy employed by Capt. William B. Walton. Has had constant fever thirty hours.

Great sense of weariness, much distress of the head, tenderness of the epigastrium, pulse full and throbbing, tongue covered with very short white fur and slightly red at the tip. Prescription: Bathe the abdomen and spine with liniment, and give a tablespoonful of syrup every two hours.

31st.—Had a slight chill last night and some fever, but no headache or other distress. Added five gr. quinine with four ounces syrup, and ordered a tablespoonful every four hours.

September 1st.—Appears clear of disease. Ordered the medicine to be given three times a day for a few days.

Case 2. September 1st, 1853.—John Stone, clerk at the Verandah. Has for several days suffered from a feeling of prostration, and a sense of heat and chilliness alternately; during the last night, sweat profusely and had copious discharges of yellow water from the bowels; abdomen tumid and sore, tongue furred and rather dry, substance of it rather dark-red, inclined to doze, and dreams half waking, pulse quite compressible, and variable, constant alternations of cold and hot sensation. Prescription: liniment to the spine and abdomen, tablespoonful of syrup every two hours.

Evening.—Pulse tolerably full and regular, skin warm and moist, abdomen less tense and tender. Continued treatment.

2d.—Same general improvement. Continued treatment.

3d.—Slowly improving; has had no passage from the bowels. Ordered two blue-mass pills, and continued syrup.

4th.—Found general improvement, consistent discharges, tongue cleaning, some appetite. Syrup every four hours.

5th.—Left his room and rode out.

Case 3. September 18th, 1854.—Mr. Jackson, College street, boat-hand. Symptoms: dull, heavy headache, with disposition to sleep, mutters when dozing, skin hot on the body, extremities rather cool, abdomen tumid and tender to pressure, considerable diarrhœa, tongue furred in the middle, but clean and red at the edges, and becomes pointed and trembles on protruding it.

Treatment.—A poultice of corn-meal and mustard to the abdomen, liniment to the spine, and a tablespoonful of syrup every two hours.

19th.—Does not mutter so much in his sleep, bowels quiet, abdomen less tense and tender. Continued treatment.

20th.—General improvement. Discontinued treatment, except syrup every two hours.

Case 4. January 1st, 1855.—Son of Mrs. Taylor, Cedar street, aged about twelve, small of his age and slightly formed, but usually enjoyed good health and was sprightly. His mother informed me that for about a week before I was called in, he had appeared unusually dull, and was inclined to sit about the house, and when directed to go on errands, went reluctantly; finally complained unusually of cold whenever he left the fire; lost his appetite, had headache, and soreness of the abdomen; diarrhœa at last set in, which for the last two days had been very severe, producing great prostration. I found him laboring under considerable headache, intolerance of light, abdomen tense, tumid, and tender to pressure, considerable heat of the head and trunk, but extremities cool, tongue thickly coated with short white fur in the middle, but clean and shining red at the edges; in thrusting it out it became extremely narrow and pointed, and trembled exceedingly.

Treatment.—A poultice of corn-meal and mustard to the abdomen, hot bricks to the feet, liniment to the spine, and a tablespoonful of syrup every two hours.

2d.—General improvement; headache less distressing, diarrhœa checked, stools consistent, abdomen less tense and tender, tongue not quite so deep-red at the edges nor so pointed, but still trembles. Continued treatment, giving the syrup every three hours.

3d.—Is still improving. Discontinued all treatment, except the syrup every four hours.

4th.—Is clear of all evidence of disease, appetite returned. Directed the syrup three times a day for a few days, and dismissed the case.

Case 5. By Isaac N. Croom, M. D., Henderson county, Tenn.

"Mr. C., aged 16, was taken December 29th, 1858, with a chill; fever continued, and I was called in December 31st. Found him restless; pain in the head, back, and limbs; skin hot and dry; tongue furred in the middle and dry, red tip and edges, pointed and tremulous; bowels tender, and a disposition to diarrhœa; pulse 120.

"January 1st.—Symptoms about the same.

"2d.—Pulse 100; slept well; said he was nearly easy, but no appetite.

"3d.—Patient decidedly convalescent, and recovered speedily.

"The above case was treated upon your plan for typhoid fever entirely. A number of other cases could be given, which have been managed with equal success."

Case 6. By J. E. Fulton, M. D., Big Oak, Miss.

"On the 20th September, 1858, I was called to see Mrs. W., aged about 30, good constitution, former health very good. I found her laboring under slight fever; some headache; pain in the back; slight tympanites [swelling from wind] of the bowels; some soreness in the right iliac region; slight diarrhœa; tongue long and peaked and very tremulous, edges red, and black scurf down the middle. She informed me that she had been ill-disposed for four or five days, but thought it unnecessary to send for a doctor, and, said she, 'I don't think I am much sick now.' Being satisfied of what was the matter, according to your directions, I put her on the comp. syrup of valerian, [fever syrup,] a tablespoonful every four hours; and on the 21st visited her again: but little improvement, probably not so much pain in the back. On the 22d I found her with less headache, and diarrhœa diminished; continued the syrup. On the 23d, considerable improvement of all the symptoms; and on the 24th, I found her sitting up in the bed eating; and on the 25th, I found her sitting on a chair rocking the babe. I dismissed the case, but ordered the syrup to be continued for a few days. The recovery was rapid and complete in a few days.

"Such has been the termination of all such cases since I came in possession of your most excellent book."

Case 7. By D. C. A. Moses, M.D., Eldridge, Ala.

"I was called to see W. G. W. H., on the 20th of April, 1857; and upon inquiry, learned that for the week previous he had been complaining of loss of appetite; general lassitude; inability to confine his mind to his business, (which was that of merchant;) dull pain in the head; general feeling of soreness in the muscles; chilly sensations alternating with heat; occasionally cold clammy sweat, morbid vigilance, etc.; and at the time of visit found all these symptoms aggravated, with considerable febrile excitement; pulse about 110; considerable thirst; tongue dry and pointed, tremulous upon protrusion; bowels slightly tympanitic, and tendency to diarrhœa; and during sleep constant muttering. Diagnosed, typhoid fever eight days' standing.

"Commenced treatment by sponging body (which was dry and hot) with warm whiskey, afterwards applied anodyne liniment to the spine and abdomen; tablespoonful of comp. syrup valerian every two hours; warm poultice to bowels, etc.; and without giving you the treatment for each day, which was nearly the same, suffice it to say, in six days he was convalescent. From imprudence, on the eighth day after convalescence, (having resumed his business and exposed himself for several hours in a cool draught of wind,) he relapsed, and when called to see him, I found him in the following condition: Perfect prostration, constant muttering, almost impossible to arouse him sufficiently to give medicine, hemorrhage from bowels, subsultus tendinum, impossible to protrude the tongue, bowels tympanitic, picking at imaginary objects, etc. But with the comp. syrup valerian and some auxiliaries, he was again convalescent on the ninth day, and has enjoyed uninterrupted health from that time to the present."

Case 8. By W. J. Miller, M.D., Gas Factory, Tenn.

"July 9th I was called to see James W., aged 17, sound constitution, had never had any serious sickness; had been complaining, for a week previous to my visit, of soreness of the flesh, aching of his bones; chilly sensations, hot and cold flashes; when he would cover up, would become too

hot, and when removed, he would soon feel chilly; tongue coated with white fur. His father had given him a dose of castor oil, which had acted freely; considerable fever; pulse 100. I prescribed six grains blue-mass, neutral mixture, and sponging the body. On the 10th I found all the symptoms increased, drowsiness and headache added to the above symptoms. I thought I had now a case of typhoid fever, and commenced your plan of treatment at once. It is useless to describe the treatment, as it was just as you direct. On the 11th, not much alteration any way. The 12th, the pulse had come down 12 beats, with some modification of skin and tongue. 13th, considerably better. 14th, so much better that I did not visit him any more. His fever had all gone, tongue about clean, headache gone, and soreness gone."

Case 9. Dr. T. G. Underwood, of Orange, Ga., writes that during the fall of 1858 he had an opportunity of treating many cases of typhoid fever, as that disease was epidemic in that region of country. He gives the symptoms as follows:

"Want of appetite; giddiness and sometimes nausea; countenance dejected, dull heavy sensation in the head, and a general feeling of weariness; general debility; no inclination to mental or corporeal action; tongue coated with a white fur. These are the premonitory symptoms; after which slight chills in the majority of cases, alternating with heat of the body; entire disgust for any kind of food; pulse quick and small; mind confused; dull, heavy pain in the head; general mental and physical depression; pain in the back and limbs. These symptoms would last for a short time; after which the febrile heat would increase; the face become flushed; the pulse rise in strength; the skin become dry and the lips parched; great thirst for cool drinks; tongue coated now with a brown fur; pain in the head, back, and limbs; increased tension and tenderness in the hypochondria; the brain more disturbed; hearing obtuse, and more or less delirium. Other symptoms were occasionally present.

"All such cases treated by other physicians, not in pos-

session of your plan, ran the usual course. I treated mine upon the plan laid down in your book, and the average time of treatment before convalescence was from six to ten days; owing, though, a good deal to what stage of the disease I was called in; if in the first stage six days, and if not, ten days.

"There was but one death, and that patient relapsed from eating pork and turnips after she was able to walk about the room."

The following letter, though not from a physician, contains so much good sense that I am induced to give it entire:

SUNFLOWER LANDING, COAHOMA COUNTY, MISS.,
March 12, 1859.

R. THOMPSON, M. D.:

DEAR SIR:—Not being a physician, but only a planter, it did not seem important that I should give my experience with your mode of treating fever; but courtesy to you, and also a wish to add my testimony as to its value, induce me to address you.

I have used your plan constantly since the early part of 1857, and in no case without beneficial results. Besides its use in pneumonia and typhoid fever as prescribed in your book, I have used your fever syrup advantageously as a general stimulant for feeble persons; and in this our damp and miasmatic climate, I am satisfied it is very valuable in such cases, affording a resisting power to the constitution. In a few instances (that of my wife amongst others) the recurrence of chills has been prevented by it. But I generally first break the chill with quinine, and then give the syrup to insure convalescence.

In our climate the constitution seems to have very little reäcting power, even after disease has entirely disappeared; in other words, we get well slowly; and this depressing tendency of the atmosphere to keep us down when once it gets us down, is to be overcome by stimulation. No other stimulant appears to be equal to the fever syrup for this purpose. The syrup has been used on the plantation of my sister-in-law, also in this vicinity, by the overseer,

whether intelligently or not I am not able to say; still, neither there nor on my own place has death ensued in a single case in which it has been used; in other words, we have not lost a single case of pneumonia or typhoid fever since I became acquainted with your plan of treatment, and we have had to contend with some severe ones. It is proper to say that I have also used quinine, ipecac., Dover's powder, and blue-mass, very moderately in the earlier stages, and also blistered; but have invariably employed your syrup in a manner fully up to your directions, relying chiefly upon it.

One of my neighbors thinks I saved the life of a member of his family, a month or two since, by sending him a bottle of the syrup with directions.

I ought to add that I have given it in cases of ordinary bilious fever, remittent and intermittent, but could not see any marked advantage until after the disease had been broken up by other usual remedies; then, as a stimulant to aid convalescence, it is of much value.

Very respectfully yours,

H. C. CHAMBERS.

J. D. Steel, M. D., of Charleston, Miss., informs me that he has treated about seventy cases of typhoid fever upon the plan laid down in this work, without a death, and that convalescence was set up in from three to five days. Many other physicians have furnished evidence that typhoid fever can be aborted by my plan of treatment; only one states that he has failed, and I am forced to the conclusion that the materials he used could not have been genuine.

It is well known that there are two kinds of sassafras, the red and the white; now the oil obtained from the white is nearly inert, it has little pungency, and will not destroy insects. It may be known from the red by having a whiter color.

One physician inquires of me if the syrup is contra-indicated in gastritis connected with fever. I have already said that it is, but in mere excitement of the stomach it may be freely given, as it serves to allay it; and much

experience by myself and others has proven that it may be given not only with impunity, but with signal advantage, when there is inflammation either in the small or large intestines. In inflammation of the stomach it makes too strong an impression, and must be suspended. For such cases, besides poultices and fomentations, I give the following:

Emulsion of Gum-Arabic, 4 oz.
Sulphate of Morphia, 4 grains.
Spirits of Turpentine, 1 drachm.
Comp. Spirits of Lavender, 2 drachms.
Mix.

Give a teaspoonful every two hours. A free application of the chloroform liniment should also be made to the spine and stomach. As soon as the stomach is relieved, the syrup should be given as before.

A number of practitioners have complained of the great pungency of the syrup, which renders it difficult to take. This must be owing to some fault in its preparation. No medicine is taken with less trouble by my patients; in fact, it is often spoken of as being peculiarly grateful, and if the directions already given (of rubbing the sassafras, piperin, and sup. carb. of soda first in a mortar, and then adding the syrup of rhubarb, again rubbing it, and lastly adding the tinc. val.) are observed, it will never be unpleasantly pungent. Druggists will not attend to these particulars unless especially charged upon the subject; but if the syrup is still too pungent, order it taken in sweet milk or emulsion of slippery-elm or gum-arabic.

I will now give a condensed view of the treatment recommended by standard authors in this disease; but it will be perceived that they agree in very few points, except in the belief that no remedy will shorten the disease.

Dr. Jackson commences with an emetic of tartarized antimony, and follows it with an active cathartic. If this does not afford decided relief, he then uses venesection, letting the blood flow until an *impression* is made; then gives tartar emetic in broken doses every two hours until decided nausea is produced, restraining its action on the bowels when necessary with opium. Formerly gave calo-

mel in frequently-repeated small doses, so as to produce salivation, but finally abandoned the measure as useless if not injurious.

Dr. Nathan Smith has never seen any remedy shorten the duration of the disease; in mild cases gives no medicine, but keeps the patient quiet; gives mild drinks and nourishment. In severer cases uses such means as will mitigate the most prominent symptoms; looks upon emetic tartar as "an inappropriate and unsafe remedy;" has known it convert a mild case into a severe one.

Chomal, of Paris, follows the expectant plan, giving only mild drinks; sponging with cold water; fomentations, mucilaginous injections, etc.; and in the latter stage gives tonics and stimulants; bleeds if the symptoms indicate it.

Loves pursues pretty much the same plan, but resorts to bleeding oftener. He says that "by the judicious use of the three principal means—bleeding, sweating, and tonics—the disease may be shortened a little—a day or two at least," and "hopes that a more successful treatment of this disease will yet be discovered."

Bouillaud bleeds freely and repeatedly, and cups and leeches in the intervals; does nothing else.

De Laroque begins with an emetic, and then gives daily brisk purgatives throughout the entire course of the disease.

Bartlett recommends the eclectic plan in a mild way, merely combating symptoms and taking care of the strength as much as possible, to enable the patient to bear up under the tedious course usually run by this disease.

Wood commences with a mild purgative; then bleeds, if arterial action is high; gives refrigerants to moderate pain; and in the second stage gives mercury and turpentine to combat inflammation.

BILIOUS OR MIASMATIC FEVER.

This disease presents a wide diversity of grades and symptoms, as it is seen in different latitudes, or in different individuals in the same region.

The leading symptoms as clearly indicate primary disturbance in the cerebro-spinal centres, [brain and spinal mar-

row,] as those of typhoid fever do a morbid condition of the ganglionic system, [great sympathetic nerve.] But as the latter system must become considerably disturbed before capillary inaction can be produced, which, we have seen, is an essential part of every case of fever; and as we see the secretions all more or less depraved, which also are under the control of the ganglionic nerves; we need not be surprised that in many cases it is difficult to decide, especially in the early stages, whether a case be typhoid or bilious. In elevated countries and in vigorous constitutions, if this disease occurs at all, it is usually characterized by a high grade of action, simulating inflammatory fever; whereas, in the far South, and in the West, in recently reclaimed alluvial districts, vital energy is often so completely exhausted by a continued action of the cause of this disease, that very slight reäction follows the stage of depression, and in some instances there is no reäction at all, but the patient dies in the first stage. In other cases the reäction is considerable, but is followed by very slight remissions, merely a lessening of the most urgent symptoms in the morning, as in continued fever; then, again, we see well-marked remissions, and in others complete intermissions, so perfect, that one unused to the disease would never expect a recurrence.

Now it has been a matter of inquiry for many thousand years, what is the nature of the morbific agent which produces this disease, and what are the circumstances necessary for its elaboration. At one time the medical mind had decided that it originates in the decomposition of vegetable matter, but this idea is now generally abandoned; and it has been equally authoritatively decided, that the only circumstance necessary for its production is high temperature, acting upon a soil which has been saturated with moisture. But however produced, or whether organized or unorganized, it is certainly a narcotic poison: the symptoms which precede an attack indicate this; as giddiness of the head, erratic pains, muscular weakness, pallor, and a dirty hue of the surface—just what we often see following an intemperate use of tobacco, opium, and other narcotics—

and in very grave attacks, produced by sudden exposure to the poison in a highly concentrated form, the symptoms are precisely those of intense narcotism, occasionally causing death without even the nervous reäction constituting a chill.

Now this inquiry into the nature of the poison producing bilious fever is not merely interesting, but is of the first importance to a correct understanding of my plan of curing it. For a long time the cinchona [Peruvian bark] and its preparations have been chiefly relied on in the treatment of intermittent fever, but all agree that, notwithstanding the disease is very uniformly arrested by the use of quinine, yet it is proverbially prone to return, often making it necessary to cure it many times before it will finally stay away. Now this is accounted for by the fact that quinine cures intermittents by acting as a nervous stimulant, producing a state of nervous power incompatible with that attending a chill; but the effect soon subsiding, it is not wonderful that the disease returns. Now the oil of sassafras evidently neutralizes this narcotic poison; and hence, when it is combined with quinine, the disease very rarely returns; but more of this presently.

I will now take up a case of bilious fever, and run it through its course, in order to illustrate my mode of management.

Suppose, for example, I am called to see a case presenting all the common symptoms of the forming stage of fever, and almost a counterpart of the one which we have considered, which turned out to be typhoid fever, but still I am not warranted in deciding that this will prove to be one; perhaps there have been other attacks lately in the family, or the immediate vicinity, which have shown themselves in their progress to be malarious, and I reasonably presume that this is of the same kind. But if I have determined to abort it, any speculations as to whether it is typhoid or miasmatic are uncalled for, as that point will never be ascertained; for putting the patient under the same treatment proposed in the forming stage of typhoid fever, will so effectually break up the diseased action, that no trace

will be left which would indicate what way the disease would have run.

But suppose I try a dose of calomel given in the evening, and visit the patient next morning, and find him much improved—the headache gone, the skin naturally moist, consistent bilious discharges, etc., etc.—I settle the case in my mind at once, that I had treated *bilious* fever in its forming stage. But have I aborted it? Perhaps not, the favorable appearances notwithstanding; and if I do not guard against it, by the time I have made my round of calls and returned to my office, I will probably find a pressing message to repair in haste to see my patient, as he is much worse. Well, I judge at once that he has had a chill; and so I find on my arrival. He is now in the stage of reäction, and his headache violent; heat of the surface pungent; thirst great; stomach irritable; pulse full and throbbing, etc., etc. Now what are the indications? Clearly, to quiet the nervous excitement, and open the capillaries so as to admit the blood to flow on freely from the arteries, and thereby relieve the excitement of the heart; and I will do this by giving a large dose at once—two or three tablespoonfuls of comp. syrup valerian in a glass of cold water—and at the same time bathe the head, neck, breast, and arms with cold water; in less than half an hour I will have my patient quite comfortable. I then leave him the following prescription: Sul. quinine, piperin, blue-mass, each 10 gr.; oil sassafras, 5 drops; make 10 pills; give one every two hours until they are all taken; then give a tablespoonful of the fever syrup, at the same interval, in half a glass of cold water, and direct some additional purgative to be taken *after the time of the chill has passed*, provided the bowels are not pretty freely moved without. I usually prefer Epsom salts. But I very often, yes, generally, leave out the mercurial entirely, and treat the case with the syrup alone, except a single five grain dose of quinine given soon after the hot stage begins to abate. The liver will commonly act very well without any assistance, except the general capillary excitement produced by the syrup. Another

formula often depended on is comp. syr. valerian, 2 oz., sul. quinine, 10 grains; give a dessert-spoonful every three hours. If the chill should be prolonged, and the reäction imperfect, showing that the fever is of the type known as congestive, I still give nothing but the *syrup*, but increase the dose largely; have given two or three ounces at a time, and repeated it in an hour. This, with warmth to the extremities, and the "half-pack," [a cold wet sheet folded and laid over the body, and covered with a dry one,] with a free application of some stimulating liniment to the spine, will generally soon bring about a fine reäction. I then treat it as a common case of chills, except that I think it safer to increase the quantity of quinine. To those who have been in the habit of resorting to active depletion and free evacuations, in order to subdue the over-action in high grades of *bilious* fever, the idea of bringing down the excitement by the use of piperin, oil of sassafras, etc., will appear quite unphilosophical. But if they will recollect that the *condition* of the system in the lowest grades is precisely the same which exists in the highest, and when they recollect what that condition is, they will cease to be astonished that the same capillary stimulant will meet both cases.

I have had many of the high grades of bilious fever under my management within the last few years, which I formerly thought called for the use of the lancet, tartar emetic, etc., but which have yielded kindly to my present mode of practice, and left the strength of the patient but very little impaired, so that convalescence was rapid. But still if I were called to a case in which active inflammation had been set up in some vital organ, I should certainly bleed; but my experience leads me to believe that in cases treated upon my present plan, no inflammatory complications will probably ever arise; they have not in my practice.

Now, if there be no distinct remission, I make one by sponging the body with cold or tepid water, or applying the wet-sheet or the half-pack of the hydropathists, and renewed

as occasion requires. At the same time I order the following:

℞—Comp. Syr. Val., 2 oz.
Dov. Powder, 10 grains.
Mix.

Dose—a dessert-spoonful every two hours.

I will further illustrate the treatment of bilious fever, by giving observations extracted from letters received from intelligent physicians in different States.

J. W. Steel, of Charleston, Miss., says: "The year 1858 will be remembered as the most sickly year within the recollection of the oldest inhabitant in this country. I prescribed for fully seven hundred cases of bilious fever, and as I made your book my guide, I lost no case, and had no protracted case. I very seldom prescribed any thing but the syrup, as it generally fulfilled every indication."

Dr. Steel says nothing about adding quinine to the syrup.

Dr. D. C. A. Moses, Eldridge, Ala., says: "The prevailing fever with us is remittent, of a low adynamic type. I have attended within the last year some three or four hundred cases, and have never failed to arrest or abort it in from twelve to thirty-six hours. I follow your book with hardly any deviations."

Dr. Moses is also silent on the use of quinine as an adjunct.

Case by A. D. Cutler, M.D., of Dresden, Tenn.:

"I was called to a gentleman taken with a chill which had lasted twenty-four hours before I saw him—had a congestive chill, I would say. Gave him calomel in twenty-grain doses, until four doses were given, which procured several copious green evacuations the next day. At my first visit I had none of the syrup with me. At my second visit, as the calomel had acted freely without apparent benefit, I resolved to try the syrup. He was still restless, with pains in the head and abdomen, sick stomach, tongue white, pulse one hundred and forty. Gave nothing but syrup, one tablespoonful every two hours in half a tumbler of cold water. Four ounces completed the cure in five days. It acted like a charm."

As bilious fever in some of its forms is emphatically *the*

disease of the South and West, causing perhaps more than half of all the sickness suffered, I think it best to dwell a little longer upon the subject. True, the general directions already given, if faithfully followed, will nearly always succeed, but the means recommended may not always be at hand, or, from some cause, may not agree with the patient, or, in case of relapse, may not prove as effectual as usual, owing to the system having become used to them by frequent repetition: most medicines lose their power over the system if long continued. I will therefore suggest other means that may be used with success; and first, of remittent fever, or, as it is commonly known by the people, *bilious fever*. For very many years before I matured the particular plan of treatment which I now rely on, I managed this disease very successfully with quite simple means—means which acted upon the same principle which those I now use do, though their manner of acting was not then so well understood; and any sensible person, who has carefully studied what I have said upon the nature of fever, and the manner in which remedies must act in order to cure it, can always find some means, though he be in the midst of a forest, far from human habitation, that will answer the purpose pretty well. For though I think there will hardly ever be discovered any remedies which will act with more certainty than those already given, yet I by no means look upon them as the only means that will do the same thing; and the fact that the same result can be brought about by the use of different remedies, forms a very good reason why the reader should strive to impress his mind with the great principles which have been dwelt upon in the preceding pages; he will then never be at a loss to do something to advantage, though the best means may not at the time be within his reach.

In the early years of my practice, I saw that the plan of treatment then relied on by physicians for the cure of fever was not a good one, and I tried to find a better. I saw that the course of bleeding, vomiting, active purging, salivating, and blistering, which the patient usually had to undergo, often caused the disease to terminate in death

sooner than it would have done if let alone to run its own course; and that, if the patient did recover, it was often with a shattered constitution. Now, as I thought that to do nothing would be better than doing harm, I early abandoned this destructive mode of practice, and resorted to means which, should they fail to break the disease, would at least not kill my patient. I thought if I could find means that would produce the various effects which we all aimed at, and would not of themselves produce debility, I would be able to assist nature in sustaining the force of the disease, and aid in throwing it off. My knowledge of the virtues of our indigenous plants was now of service to me; this knowledge had not been originally acquired from books, but from observation and experience. In my early boyhood, doctors were "few and far between," and our mothers from necessity turned doctors. The author very early manifested some capacity and showed an inclination to wait upon the sick, and was soon installed as nurse in the family, and frequently acted as such among his near neighbors, always following the instructions of his mother, in whose skill he had great confidence—who, by the way, was a woman of much good natural sense, great prudence, and untiring energy; was, in short, in the proper sense of the term, a "strong-minded woman," and yet enjoys a green old age of over four-score and ten.

In this way the author acquired a pretty good acquaintance with all the most useful domestic remedies, and it was now to this source that he turned in search of means by which he hoped to manage fever without causing exhaustion.

Among our indigenous medicinal plants, the boneset (*Eupatorium Perfoliatum*) was deservedly held in high repute; I knew it would act as an emetic, when given in form of a strong infusion, and administered freely; I also knew that it afterward usually produced active perspiration; having also tonic properties, it left the system invigorated. So the next attack of fever I was called to treat I managed as follows: Finding a full pulse, throbbing carotids, great headache, etc., I thought I dare not omit bleeding, and perhaps

it was best not to; after abstracting twelve or fifteen ounces of blood, I gave half a pint of a very strong infusion of the boneset, and repeated in fifteen minutes; the second draught was soon followed with free emesis, [vomiting,] throwing off considerable bile; a weaker infusion was now given, until I supposed all the bile then in the stomach was discharged; near a tablespoonful of Bateman's drops was now administered, for the purpose of quieting the stomach, and exciting perspiration. I also gave ten grains of calomel to carry off the bile from the bowels, and be ready to act by the time the sweating process should be over. Perspiration was kept up pretty actively several hours, by frequent draughts of infusion of *wild sage*, with a grain of ipecac. to the pint.

After getting my patient fairly under the sweating process, and directing a tablespoonful of epsom salts administered in the morning to work off the calomel, I left quite pleased with the plan thus far. On my visit next day I found my patient much better, but there was still considerable fever; but the headache and restlessness were much less. I directed a moderately strong infusion of the boneset, with two grains of ipecac. to the pint, a tablespoonful every hour until the patient sweat or vomited, and then to be followed by the Bateman's drops, calomel, and wild sage tea, as on the day before. On my third visit I found my patient quite clear of any manifestations of disease; there was very little prostration, appetite returning; directed a bottle to be half filled with equal quantities of dogwood, wild-cherry, and yellow poplar bark, and then filled with rye whiskey, (it being made in the neighborhood, it could be always obtained genuine,) the patient to take a wine-glassful three times a day, to prevent relapse. This I looked upon as a great achievement—a case cured in forty-eight hours, which under my former treatment would probably have lasted two or three weeks at least; and this without a sore mouth, and with a whole skin.

My after experience was equally satisfactory. Some cases would linger a few days longer, and some required the aid of other means; but whatever was done, the main point was kept in view, not to exhaust the patient's ener-

gies. Nothing was said about this new practice, and, therefore, the author escaped the odium of an innovator, and the opposition of his professional brethren. About all that was said was, that "Thompson was very successful, and didn't give much strong medicine." The author pursued this practice for about six years, when his health failed from excessive labor, so that he thought it advisable to seek a milder climate, and accordingly came to Tennessee. In the course of a few months his health so far improved as to warrant him again to commence practicing in a small way. Here he met with cases of the same grade of fever with which he had contended in Ohio; but there was a much greater tendency to chills; but as quinine had now been fully introduced, he found but little difficulty in the management of that feature.

But he was quite at a loss concerning his favorite remedy, the boneset; it could not be found in the vicinity, and the dried article obtained at drug-stores proved to be quite inert; so he was forced to seek a substitute, which he found in the vervine, a plant growing in almost every yard; he found it a more stimulating emetic than the boneset, but not quite so active; therefore a few grains of ipecac. were added; he also found in the scabish, a white-blossomed weed infesting small grain and clover fields, a most valuable sudorific. It is equally as powerful as the boneset, and much pleasanter, and less apt to nauseate. I now rarely bled, but still thought it essential to vomit, and after the vomiting, my habit was to give ten grains of calomel with three of Dover's powder, and then commence with the infusion of scabish, adding a teaspoonful of sp. nit. dulc. to each draught if there were much heat of the skin; this was continued for several hours, and then followed with the infusion of wild sage, which I could always find. I also became acquainted with another exceedingly mild and pleasant sweating remedy—the queen of the meadow. This is a most noble-looking plant, growing often fifteen feet high, with a stem an inch and a half in diameter; but it is rather a rare plant, being only found in rich bottoms untrodden by cattle; but, as the stem was the part

I used, an inch of which being sufficient for a pint of boiling water, a single stalk would suffice for a year's practice. The tea made from this plant has hardly any taste, and when cold, is taken by patients freely during the highest fever, when any of the other remedies named would be contra-indicated, or too repulsive to be borne by the stomach. The tea of this plant, though destitute of taste, and apparently of medicinal virtues, yet often causes the fever to gradually abate, and a pleasant moisture to succeed. Now all this time the author had no theory upon the subject, further than that fever is a depressing agent, and requires to be met by means which will sustain the vital energies. About this time, what is known as congestive fever was first seen by the author, the phenomena of which impressed him still more forcibly with the truth, that the cause of fever acts as a depressing agent. The same mode of treatment during the febrile stage, and large doses of quinine, after a remission had been obtained, enabled him to succeed very satisfactorily with this fever. But a few years later, he met with another form of fever, which brought him to a stand-still. He had heard, for a year or two, of a fever prevailing in a distant neighborhood, which the physicians could not manage; it was said to go through whole families, and that very few recovered. One gentleman, who had a wife and several grown children with him, besides quite a number of negroes, was in the course of a year left alone, except a few old servants. Finally, I was called to a case which at first showed nothing peculiar, except that though the symptoms appeared to be quite mild, and the patient complained but little, yet my usual remedies did no good, and the disease went on as though nothing had been done. I soon found that my treatment was doing positive harm—the sweating was exhaustive, and ended in prostrating diarrhœa. I abandoned sudorifics and resorted to blisters and calomel. At one time I thought I had succeeded: the liver acted well, and there was some appetite. Soon another case occurred, a brother of the first; I commenced treating him with broken doses of calomel, and occasionally a teaspoonful of salts. Both went on, alter-

nately giving good hope of success, and then arousing all my fears, until death put an end to the strife.

Now it was clearly evident, upon a quiet retrospect of the cases, that I had done no good, and I believed had done harm. I therefore resolved, had I other cases, to do nothing, and wait for light. Some five or six other cases occurred in the family, which, upon the do-nothing system, all finally recovered.

I said I did nothing, but that is not strictly true. I had the surface sponged with tepid soapsuds whenever it was too hot, and the bowels poulticed when they were painful, suppositories of opium used when there was diarrhœa, and broken doses of epsom salts when they were costive. I never improved upon this treatment until about ten years ago. During the long rides I frequently took between my home in Wilson and the Caney Fork country in Smith, where I was contending with epidemic dysentery, I carefully reinvestigated the whole subject of fever, and sought to analyze it, so as to ascertain what was essential, and what secondary or incidental. By this process, I ascertained that there were but two things which were always present; the absence of either was also the absence of fever; these are, as my readers know, nervous disturbance and capillary debility. How all the other symptoms of fever grow out of these, and how my present mode of treatment was naturally suggested by this theory, have been fully explained in the preceding pages.

This theory was often investigated, and the treatment proven by varied experience to be perfectly reliable, and of general application; for as it attacks fever by removing the condition in which it consists, causing the febrile movement to subside, as water ceases to flow when the supply is cut off, I expected that *typhoid fever*, taken at a stage before inflammatory complications were formed, would yield to its power just as other fevers, and so it did, every case yielding in a few days. Now it is very improbable that I should have been mistaken in diagnosing the cases—I, who for many years had, with great care, noted the first symptoms of the disease, in order to avoid doing mischief by improper

medication, and thus had become able to detect the disease in its very earliest stage, with very rare exceptions. I was not mistaken. Others have not been mistaken, and have succeeded as fully as I claim to have done. A few others, it is true, have not been so successful, but these only form the exceptions to the rule, *that typhoid fever treated upon the plan laid down in this book, when taken in the incipient stage, or before inflammatory complications are set up, will yield in a few days, leaving the patient very little weakened or injured in any way.*

But to return to the subject of bilious remittent fever. I think what I have written upon this subject is amply sufficient to give any person of good sense a very accurate knowledge of my method of managing this disease; but, as many of my readers may not have the leisure or inclination to study what has been said so as to remember each part in its proper connection, in order to assist such, I will now sum up the principal directions so that they can be all taken into view at a glance. When any of your family complain of the premonitory [threatening] symptoms of fever, viz.: sluggishness, some headache, loss of appetite, aching of the limbs, etc., you should not wait to ascertain whether the case will develop itself into bilious, typhoid, scarlet, or some other fever, or merely turn out to be a common cold, or pass off without any sickness following: people don't wait for the turning up of events when danger in other forms is threatening: if you find your fence broken, you mend it at once, and don't wait to see what kind of stock will break into your enclosure, or whether any kind will disturb you; if your hay is out, and the sky looks lowering, you lose no time in waiting to see whether it will rain, or hail, or clear off, but you secure your hay; the merchant, when passing events indicate a decline in prices, waits not to ascertain whether the fall will be little or great, or whether a reäction may not come in time to prevent any loss upon his stock on hand, but pushes it into market while it will bring a price that will insure him from loss; so men act with regard to every threatened evil, except danger to the health of the body and the salvation of the soul: these

they are too prone to risk. Well, when you have the symptoms mentioned as threatening an attack of some form of fever, let the diet be light, take a tablespoonful of fever syrup, or a cup or two of ginger tea, bathe the feet in warm water, as warm as it can be borne—it is better if mustard is added; go to bed early, and if the symptoms are not fully removed by morning, commence a regular course of treatment, as directed in a former part of this chapter, viz.: give the syrup in tablespoonful doses every two or three hours, apply the chloroform liniment freely to the whole length of the spine, and to every other part that is suffering, but to the spine particularly, as there is the origin of the nerves which supply the greater part of the body with sensation, and if they are quieted at their origin, they will cease complaining in the parts in which they terminate. If the syrup is not at hand, give the boneset or vervine tea, with a race or two of ginger to prevent nausea. Give the tea in broken doses, so that, if the stomach is not foul, it may act upon the skin without vomiting; but if there be bile in the stomach, it will and ought to vomit. If it does, give freely of warm water until the stomach has emptied itself pretty well; then give at least half a tablespoonful of paregoric or Bateman's drops to quiet the stomach. If neither of these is at hand, apply a mustard poultice to the pit of the stomach, and give no drink of any kind until the disposition to vomit has subsided; then commence with some mild tea, such as wild sage, queen of the meadow, balm, etc. If the boneset or vervine tea should not produce much nausea, continue it until a free action on the surface is produced, then change it for one that is milder and pleasanter, and which can be drunk freely instead of water. If there is still headache and other bad feelings the next morning, give ten grains of blue-mass or six of calomel, and follow it in three or four hours with a dose of castor oil or epsom salts. After the purgative has operated two or three times, give Bateman's drops or paregoric, and follow it with some of the mild teas, as before. If there is any coldness of the feet, warmth should be applied to them; also give two or three grains of quinine every four hours, until ten

or fifteen are taken; cold water should be freely applied to the head if there is any unnatural heat; mush poultices, sprinkled with mustard, should be applied to any local part that may be suffering. As soon as the fever appears to be broken up, give bitters of dogwood, poplar, and wild cherry bark; they may be used in spirits or in water. If there is any tendency to chills, add the bark of the root of the common willow. But a little foresight will enable every one, however remote from a druggist, to keep on hand my principal remedies, the *fever syrup* and the *chloroform liniment;* and with them, if used as I have directed, the fever can be broken up quicker and with much less trouble.

If the fever be intermittent—that is, if it goes entirely off and then returns again—whether there be any distinct chill or not, you should combine ten grains of quinine with four ounces of fever syrup, and give a dessert-spoonful, or half a tablespoonful, every three hours, commencing as soon as the fever begins to decline. If quinine cannot be obtained, make a strong tea of the willow bark and ginger, and give it as freely as the patient can take it; and add a tablespoonful of Bateman's drops about an hour before the chill is expected. Mustard applied to the feet and to the stomach will very materially aid other means in keeping off a chill. The cold bath, or sponging the body with cold water, will be of great service in bracing the system, so as to hasten the recovery and prevent a relapse. The water should not be very cold, and, if the patient is very delicate or is much reduced, the sponging should be done before a brisk fire. Whatever remedies are used for breaking up chills should be continued for some time after the patient appears to be well, as it is prone to return; and after a few relapses it becomes exceedingly difficult to be kept off. If a teaspoonful of fever syrup is taken after each meal for a week or two, there will be very little danger of relapse.

CONGESTIVE CHILLS.

This form of bilious fever some years ago was quite prevalent in this country and exceedingly fatal, so much so

as to cause the name to become one of terror to the people. Of late years we rarely hear of a case; but as it still prevails in other parts of the South and great West, it becomes necessary to give it a particular notice. All fevers, and especially all chills, are congestive; there is congestion in all; that is, there is an unnatural accumulation of blood in the great veins; but in the variety we are considering, this fulness or stagnation of the blood in the venous system is much greater than in other fevers, and hence it has received the name of *congestive*, to distinguish it from varieties in which this condition is less observable.

The malaria, or poison which causes bilious fever, we have said, acts as a narcotic poison and produces nervous prostration; and, consequently, a loss of tone and vital energy in every part of the system, but especially of the heart and capillary vessels. Now the heart, being greatly weakened, acts feebly in pushing on the current of blood; and the capillaries, being also weakened, do not pass it on, but become dilated and engorged with blood, so as to give to the surface a dusky or leaden hue. Now when the heart is vigorous and propels the blood with force, as we see it do in most fevers, the obstruction which the torpid capillaries offer causes the blood to be principally in the arteries; hence the whole person looks full, the face is flushed, the eyes red, etc. We now have arterial congestion; but when the heart beats feebly and the blood is not passed on by the capillaries, it must of necessity accumulate in the veins, and especially in the great internal veins, which are not surrounded by muscles as those externally are, especially of the limbs, by whose contractions the blood is forced onward, and no great accumulation can take place in them. The prominent symptoms of a congestive chill can therefore be accounted for as follows: the great nervous depression causes a feeling of languor, feebleness, helplessness—the little force given to the blood by the weakened heart is not sufficient to send it through the lungs with the rapidity necessary to keep up such a degree of vitalization of the whole mass as is necessary for the supply of the system; hence the blood, for want of the proper changes which it

should receive in the lungs, becomes dark, and, being partly stagnant in the capillaries, imparts a dusky or bluish appearance to the whole surface. This imperfect vitalization of the blood is the chief cause of that indescribable sense of sinking and restlessness which is often so distressing a feature in this disease. The patient rolls from side to side; sighs deeply, as though in great trouble; and yet, if interrogated, cannot tell why he does so; there is often no positive pain or sickness, and yet the distress is such that it would be willingly exchanged for either or for both. In the worst cases there is no sense of chilliness; I have said in another place that chill was the result of nervous reäction, and here the nervous prostration is too profound for that. In milder cases there is partial nervous reäction—just enough to give a mixed feeling of heat and cold—the patient feeling as though he had chill and fever at the same moment. Now although there is great nervous prostration, and, as a consequence, extreme general debility and insensibility, yet the nerves of *feeling* are not insensible to impressions; on the contrary, they are morbidly sensitive, so that causes will produce keen suffering which ordinarily occasion none, or even a pleasurable sensation; hence, though the patient feels cold to another, the sensibility to heat is so acute as to cause the sensation of heat to him, and for this reason hot applications are quite unbearable, and will do much injury if persisted in. There is no one symptom so *diagnostic* as this; that is, nothing else can be so safely relied on as this symptom in deciding whether a fever is really what we mean by congestive or not. It is true we see the same condition in the last stage of cholera, and in severe hemorrhage, [bleeding,] and from the same cause, viz.: from great loss of vital energy, sensibility always being found in an inverse ratio to vital energy; hence, the strong man will hardly notice causes which produce in the delicate female great suffering; but this strong man may be brought, in a few hours, by the poison of malaria, or cholera, or from loss of blood, to the weakness of a child and the sensibility of a delicate, nervous woman. It is a favorable omen for the patient, after suffering from a

sensation of heat while feeling cold to others, to complain of chilliness, for it shows that nervous reäction has commenced; and this will usually soon be followed by arterial reäction, which, when established, removes all present danger.

I think the reader will now be able to recognize a case of congestive fever when he sees it, and will have some tolerably clear ideas of the true condition of the patient—that is, what gives rise to the prominent symptoms—and will now be better prepared to understand the reason for using the remedies which I will now recommend, and even resort to other appropriate means, should these not be at hand. I am aware that a medical work intended for families is expected to be composed only of plain, practical directions for managing the various diseases to which we are liable, and that the common reader should not be bored with explanations of the reason of things; and this idea has been the cause of the almost universal failure of such works becoming useful. No person, physician or nurse, can safely administer remedies without some reasonable idea of what they wish to accomplish, and how the means will act in accomplishing the end; and in almost every family there will be found some member who has capacity for, and will take a delight in, studying these things so as to understand them. The fact is, people love to think, and any subject, however scientific, if presented in such a way as to be easily comprehended, and in language which can be understood without much effort, will interest every reader who has a reasonable share of common sense and the usual amount of curiosity. I say curiosity, for the same kind of impulse which will prompt a person to desire to see new things, will also influence him to seek to understand new ideas; and as women are supposed to possess more curiosity than men, I expect them to read my book more, and understand it better, than men; and this is as it should be, for women are the natural family physicians, as well as the careful nurses.

TREATMENT OF CONGESTIVE FEVER.

This, like the milder grades of bilious fever, may either be remittent or intermittent—distinguished by the terms *congestive fever* and *congestive chills*. But there is not much foundation for thus dividing the disease, as, in every case which is grave enough to be dignified by the term *congestive*, the fever does not entirely go off before the accession of another paroxysm or chill; when it does go entirely off, the next chill will be of the ordinary kind. I will, therefore, only speak here of congestive fever of the remittent type, as the directions already given are amply sufficient to enable any one to manage that form which presents perfect intermissions.

I have already said that this disease requires prompt and decisive treatment; but this being of the very same nature of the milder grades of bilious fever, the same general plan of treatment is equally applicable to it as to the others, only graduating the force of the means to the violence of the case. I therefore commence with this fever as I do with all others, viz.: give the fever syrup, apply the chloroform liniment, etc., but the syrup must now be given heroically—as much as four ounces has been sometimes given at once, and repeated in an hour. If this should not be at hand, stir a teaspoonful of ground mustard in a glass of cold water and give it at once: if it vomits, as it probably will in a few minutes, it is all the better, as the effort of vomiting will aid powerfully in throwing the blood to the surface, and in expanding the lungs. But if it should not vomit, it will do no harm, but will act as a powerful general stimulant through the medium of the sympathies that exist between the stomach and the rest of the system. Cold water is usually craved, and should be indulged in freely, for, though the surface may be ever so cold, there is great internal heat, as will be shown by the contents of the stomach coming up hot. But if the vomiting should continue so as to weary the patient, a mustard poultice must be applied to the stomach, and to the arms between the shoulder and elbow. I cannot account for it, but a blister,

or stimulating poultice, applied to this part of the arm, will exert a greater control over the stomach than if applied directly over it, but it is well to do both. At the same time, a full dose of paregoric, Bateman's drops, or morphine, or opium, should be given; a tablespoonful of the drops, or a grain of morphine, or two grains of opium, will not be too much for a strong man, and less for a woman or child. The opiate will not only be beneficial in arresting the vomiting, but will materially assist in getting up reäction. I always direct mustard plasters to the feet, and hot bricks to keep them warm until the patient complains, and then remove the bricks. As soon as there is some evidence of reäction, a sheet, folded into proper size and saturated with *cold water*, should be wrapped around the body and covered with a dry blanket; as soon as it feels unpleasantly warm to the patient, it should be immersed again in cold water and reäpplied; cold may also be applied to the head; ice, or iced water, or lemonade, may be allowed in small quantities between spells of vomiting, and if there is no vomiting, they, or any other mild cooling drink, can be allowed freely. After reäction has been pretty well established, the fever syrup should be given in tablespoonful doses every two or three hours; and, as the patient is now usually very thirsty, it may be given in a glass of cold water; quinine should now also be given quite liberally, but not in the unreasonable, and, I think, dangerous quantities recommended by some—given at the same time with the syrup, or combined with it; from two to five grains given every three or four hours will be sufficient. It should always be carried to the extent of producing slight ringing in the ears, and then the quantity lessened: this is the only means we have of knowing when the dose is sufficient; it must impress the nervous system, and some cases will require five times the amount to do this that is sufficient in others, so that I always make it a rule to commence with two grains, and increase each dose one grain until this effect is in some measure produced, and then drop back to a smaller quantity. In this way I am almost certain to save my patient from the danger of another paroxysm, and, at the

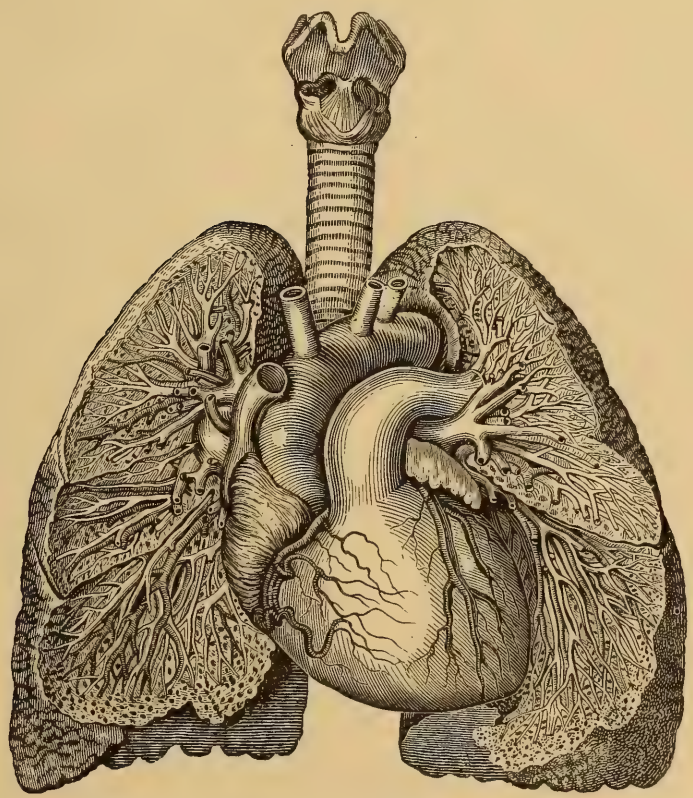
same time, run no risk of impressing the system too much. By giving the syrup at the same time with the quinine, it insures its action on the surface, and prevents any lasting unpleasant effects upon the head; in fact, I have several times given the quinine and syrup freely in conjunction to patients who, on some former occasion, had taken quinine in injurious quantities, so as to occasion continued ringing in the ears and indistinctness of hearing, with the effect of completely removing these unpleasant effects, though they had lasted for years.

It is hardly necessary to give the treatment recommended by standard authors in this disease, as it is little else than that which was pursued twenty years ago, viz.: vomiting, bleeding, the daily use of calomel, blistering, etc., etc. The injurious effects of this treatment have been so fully dwelt on in the preceding pages, that nothing more is necessary to be said upon the subject here. But, though authors continue to recommend this mode of treatment, it is evident that they have but little confidence in it. Dr. Watson says: "Boerhäve, in the preface to his *Aphorisms*, professes that 'he knows of nothing which can be fitly termed a *remedy*.' In fevers, the wisdom of this maxim is eminently conspicuous; the rational objects of treatment are, to mitigate the urgency of symptoms that cannot be wholly subdued; to redress (as far as art may redress) those dangerous complications which are incidental, but not essential, to the disease; and to aid the conservative efforts of nature, when these manifestly languish and fail." Now I claim for the plan of treatment laid down in this book that, taken as a whole, it is a *remedy* in the fullest sense of that term; that is, if properly pursued, in the early stages of fever at least it will *cure* fever, as external inflammation is often cured by a timely use of poultices, etc., or as the toothache is cured by extracting the offending member.

PULMONIC OR LUNG FEVER—PNEUMONIA.

Pneumonia has been placed by authors among the inflammations, and considered by them simply as inflammation of the lungs. I think this classification calculated to mislead;

A SIDE VIEW OF THE SUPERFICIAL ARTERIES AND VEINS OF THE FACE AND NECK.



A VIEW OF THE BRONCHIA AND BLOOD-VESSELS OF THE LUNGS, AS SHOWN BY DISSECTION, AS WELL AS THE RELATIVE POSITION OF THE LUNGS TO THE HEART.

for though there is always inflammation when this disease is fully formed, yet that does not generally constitute the most prominent feature in the disease. It is always ushered in with the common symptoms constituting the first stage of fever, which often precede any distinct evidence of pulmonary disturbance; and, if properly treated in this stage, may be aborted, and no inflammatory action be developed; or, in very grave cases, the nervous prostration and congestion may be so overwhelming as to destroy life before any symptoms of inflammation of the lungs have appeared. With this view of the subject, I have thought proper to class it with particular fevers, it presenting all the essential elements of fever, to which the disturbance in the lungs is added, either by the action of exposure to cold and wet, or by some peculiar condition or epidemic influence in the atmosphere, which determines the fever to affect the lungs rather than any other portion of the system.

Pneumonia, it has been said, is ushered in with the symptoms common to almost all febrile diseases, viz.: listlessness, languor, aching of the back and limbs, sense of weakness, etc., with more or less of the symptoms of catarrh, or common cold, viz., more or less chilliness, sometimes a distinct chill, always attended with an uncomfortable sense of tightness in the chest, or the feeling occasioned by breathing a very dense or impure atmosphere. When the period of reäction is ushered in, there is, in addition to the symptoms common to febrile excitement, viz., headache, throbbing of the heart and arteries, increased heat of the skin, either general or partial, etc., also more or less dull pain in the chest, generally only on one side; sometimes there is also acute pain, which appears to be immediately under the ribs, which arises from a part of the pleura, or membrane which lines the ribs and forms an outer covering for the lungs, being also inflamed. This membrane possesses great sensibility, and when inflamed gives acute suffering, the patient feeling sharp or lancinating pain every time the ribs are moved in breathing; but the substance of the lungs possesses very little sensibility; hence inflammation in them causes only a dull or aching pain. When the

lungs only are inflamed, the disease is called PNEUMONITIS, or *Pneumonia;* and when the pleura only is affected, it is called PLEURITIS, or *Pleurisy;* and when both are involved, it is known as Pleuro-Pneumonia.

There is always, in this stage of pneumonia, a good deal of cough; at first it will hardly draw attention, either from the patient or friends, but as the disease progresses it becomes harassing, being dry and almost incessant. At first there is nothing raised, but presently a little white frothy mucus, often slightly streaked with blood, is spit up after a hard spell of coughing; afterward the sputa [matter spit] becomes discolored, assuming a grayish, or greenish, or reddish hue, sometimes mixed with pure blood. The patient is inclined to lie on his back with the head higher than usual, and the difficulty of breathing is now quite distressing, attended with a good deal of pain in some part of the chest, generally of the right side, and below the middle rib; if the pleura is inflamed, the pain is severe and darting, causing the patient to hold the ribs as still as possible, and breathing almost entirely with the diaphragm and abdominal muscles; hence, a practiced eye can decide at a glance if pleurisy be connected with pneumonia, by the heaving of the abdomen. But the most certain means of determining whether a case be pneumonia or not, are what are known as the *physical signs;* and these can be very readily learned by any person who has a good ear and will give the subject a little attention. Now in order to be prepared to decide when any thing is wrong, you must first become familiar with the signs when every thing is right. A few plain directions will enable you to do this. And, first, of *percussion.* Place the fingers of the left hand flat upon the chest, and gently tap them with the ends of those of your right hand; if the lungs are in a sound condition, the sound will be that presented by tapping a hollow substance. You may soon familiarize yourself with this sound by first tapping the chest and then the thigh. You must recollect that the sound is always dull over the heart, which is near the centre of the left side, and over the liver, which occupies the lower third of the space within the ribs on the

right side. Now, when you have become familiar with the sound produced by percussion, you can be able to detect a very slight change in the condition of the lungs, though it should be circumscribed within a small space. But as there are many causes that may occasion a flat or dull sound on percussion besides pneumonia, you cannot by this alone decide whether that disease is present or not—all you can know by it is, whether the patient breathes through all the lungs or not; for if the air vesicles are pervious and admit the air, the sound will be hollow, and not flat. But next, you must test it by *auscultation;* that is, by listening to the sounds within the chest. An instrument called a Stethoscope is generally used by physicians in listening for respiratory sounds; it very much increases the force of the sounds, but to an unpracticed or very sensitive ear, it gives a confusion of sounds; and as I know by experience that the ear, placed in contact with the chest, with not more than one or two garments between, can distinguish with sufficient accuracy all the leading sounds from each other, I therefore recommend you to practice with the ear alone, without any instrument. If the breathing is natural and the lungs sound, you will, after composing yourself and listening attentively, be able to hear what is called the *respiratory murmur.* I have thought it resembled the murmur of a gentle breeze among thick foliage more than any thing else; but every one must learn to distinguish it for himself. In children this respiratory murmur is louder and a little rougher than in the adult; and when there is excitement in the lungs as in common cold, or the forming stage of pneumonia, the murmur resembles that heard in the child, and is known as *puerile respiration.* Now in the first stage of pneumonia, when the frothy expectoration spoken of is present, the air, passing from the air vesicles through the mucus in the minute branches of the bronchia, causes a succession of little bubbles to form and then burst, producing a slight crackling noise which has been compared to the crackling of grains of salt thrown upon a hot surface, and is known as *minute crepitation.* In a more advanced stage of the disease, when a tenacious mucus has accumu-

lated in the larger bronchial tubes, the same thing takes place in them; and, as the bubbles now are larger, the noise occasioned by their bursting will be louder, and is called *large crepitation.* Now if the air-cells have become filled with a coagulable deposit, and the minute bronchial tubes also obstructed so that no air passes through them, you cannot hear any of the sounds mentioned, but you will hear a kind of whistling sound, produced by the forcible passage of air through the partially closed larger bronchial tubes, and known as *bronchial respiration.*

Having learned this much, you are prepared to decide positively when a person has pneumonia; also to determine the exact stage of the disease, and be able to form a pretty accurate judgment as to whether the case is a dangerous one, or whether it is likely to terminate favorably.

In order to impress what has been said upon your mind, and make you familiar with it, we will now take up a case of pneumonia, and trace it through its various stages, either to health or dissolution. Suppose we visit a case, and find the general symptoms of fever, with a rather unusually flushed countenance, breathing rather laborious, some pain, either dull or sharp, in some part of the chest, considerable cough, and occasionally some white frothy matter expectorated, the patient lying on his back of choice, with his head raised higher than usual—we have good reason to suspect pneumonia in its first stage; and if we now place our ear to the chest, we will perceive the minute crepitus over a greater or less extent of lung; perhaps we may also hear a slight respiratory murmur combined with it, for the air may yet be entering some of the air-cells. But if the disease be suffered to progress, and we examine the case some two or three days later, we will not only have presented a flatter sound on percussion, but we will find, upon listening, that the respiratory murmur and the minute crepitation are both gone, and no sound is heard but either the whistling of bronchial respiration, or the great crepitation, or both combined. We now know that we have pneumonia in its second stage—that the air-cells and minute bronchial tubes are filled up by coagula-

ble matter so as to be impervious to the air; and if the lung were now cut into, it would present very much the appearance of *liver*, the engorged capillaries giving it the color, and the morbid deposit in the cells giving it the solidity, of liver; but if nature, or proper remedies, have brought the system to the *secreting point*, a free secretion of mucus may give us at this stage the large crepitation; but if the fever has progressed, the bronchia will be dry, and we will only hear the bronchial respiration. Now the patient cannot remain long in this condition; the disease will probably soon terminate in one of two ways: either this morbid deposit in the cells will be taken up by the absorbents, and the air be again admitted, and we again be greeted with the minute crepitation, or *softening* will take place, and the substance of the lungs destroyed, forming a case of acute consumption; or pus may be infiltrated into the meshes of the cellular membrane, and in the bronchia; we will then have difficult and laborious breathing, connected with an abundant expectoration of pus and mucus.

The patient may survive this condition, but the chances are doubtful. We are now prepared to understand the reason or the *rationale* of the treatment—which we will next consider.

The *fever* which accompanies pneumonia may either be of a high inflammatory grade, or it may be ordinary bilious remittent, or it may be congestive, or it may be typhoid. Now the great difficulty with physicians has been to decide upon the type or grade of the fever; for, according to the usual mode of treatment, a mistake may cost the life of the patient; but that difficulty, and that danger, are entirely removed by my method of treating fever; for the reader who has followed me thus far, knows that my plan of treatment is equally applicable to every type of fever, and equally successful—more successful, as can be established by proof that cannot be set aside, than any other of which we have any history. I therefore treat the fever attending pneumonia as I do all others. I give the fever syrup in such doses, and repeated at such intervals, as will insure a good capillary action; and in obtaining this I have

also gone very far toward relieving the lungs. In the forming stage nothing else is needed, for to put the capillaries into active exercise is to remove the engorgement, or congestion, in which the disease of the lungs then consists. When the first stage is fully formed, it is safest to assist the action of the syrup with other means—a grain of tartar or two grains of ipecac. may be put into a glass of cold water, and a tablespoonful given every hour. If the cough be troublesome, a grain of morphia or thirty drops of laudanum may be added; chloroform liniment should also be freely applied to the spine and to the breast, and cloths wrung out of very warm water applied to the chest, and frequently repeated. Now if the fever be typhoid, this is emphatically *the* treatment; and if it be bilious, it will equally succeed; and even should it be inflammatory, nothing else is necessary, except that the nauseants should be pushed a little farther; but in no case should they be carried beyond slight nausea. If the case shows, in its progress, that it is bilious remittent, it will be safe, and best, to give ten or fifteen grains of calomel, and follow it with castor oil in three or four hours; for, by exciting and disgorging the liver, we lessen the labor of the lungs; and after the bowels have been well moved, quinine and opium may be given. I usually in these cases prescribe ten grains of sul. quinine, five grains of Dover's powder, and five of gum-camphor; make four pills, and direct one to be given every three or four hours.

But as example is more striking than precept, I will present the reader with the history of the treatment of a very violent case of this disease, which I managed during the winter of 1854. The patient was a Mr. T. of this city, a young man of intemperate habits, and who had been, for some weeks previous to the attack, most of the time intoxicated. This being the case, his friends looked upon his attack as nothing more than a *cold*, and neglected to apply for medical aid until the disease had progressed a number of days. When I saw him, the powers of life were very nearly overwhelmed. His breathing was exceedingly hurried, attended with an incessant hacking cough, and no expecto-

ration whatever; his pulse was frequent, (about one hundred and fifty,) but had very little force or volume; no respiratory sounds whatever could be heard by placing my ear to the chest; his eyes were deeply injected, and his face flushed, with livid blotches; the under side of his face, and even of his arms and body, presented the appearance usually seen some hours after death, occasioned by the blood settling in the capillaries of the dependent parts; his extremities were cold and shrunken, and altogether he presented a state of the system in which there can be but little hope of a successful reäction. But I resolved on making an effort, and accordingly ordered hot water prepared, and a number of bricks to be warmed. For although I did not presume that the prolongation of the life of the patient would *pay* for the smallest outlay of skill, yet, as a test of the powers of the mode of treatment, it might be of immense value. I accordingly devoted as much time to seeing that the plan of treatment was duly carried out as was compatible with other duties, and thus saw that the directions were fully carried out, viz., that the whole chest should be enveloped with the cloths wrung out of warm water, and repeated every ten or fifteen minutes; that the extremities be kept warmed by the imparted heat of hot bricks, etc., etc. I gave him a tablespoonful of the syrup every hour, in half a glass of water, and allowed him no other drink. After the lapse of twelve hours I discovered the following changes: his cough was not so incessant, but when he did cough, it was attended with a free expectoration of exceedingly offensive matter, such as evidently had been accumulating in his lungs for days; his pulse was less frequent, and his skin and tongue showed a little capillary action. On listening for sounds in the chest, I now discovered a distinct *tubular sound.* The same treatment was continued for another twelve hours, when I thought best to discontinue the use of the hot cloths, and cover the whole chest with a fly-blister. At this time, in addition to the tubular sound, I discovered some *crepitus*, and a little afterwards the real *mucous rale*, showing that the air was having access into not only the smaller bronchial

tubes, but also their minute ramifications; twelve hours later, the blister had drawn well, and as a result of this, and the general stimulant effect of the syrup, the breathing was much easier, the expectoration freer, causing little effort, the pulse had sunk to one hundred, the countenance looked more intelligent and life-like, the skin had lost its mottled hue, and the lungs produced a sensible *respiratory murmur* over a part of their surface; the tongue was yet red and pointed, and trembled as it usually does in the second week of typhoid fever, and the strength exceedingly little, and mental effort almost nothing, the patient seeming, though rational, to have the mind of an infant. The blister, as the sensibility was very low, caused no suffering of consequence, but produced a most happy influence upon the *irritability* of the capillaries, causing those of the lungs to act more vigorously by *direct association*, and those of the general system to feel the impression through the nervous centres; the result was, that there was a *general amendment*.

The blister, however, soon seemed to lose its effect, and the hot cloths were obliged to be again resumed, to keep up that amount of action in the pulmonary capillaries which is indispensable to the performance of the function of the lungs sufficiently to continue life at all. But by persevering in the use of these means as occasion required, and a regular use of the syrup, the system was kept in that condition which enabled the recuperative powers to act with such efficiency that eventually a healthy action was established, and the patient slowly recovered. No medicine was given internally during the entire term of treatment but the syrup; being resolved, as the patient's life was probably of no other advantage, to make it of value in establishing the fact that this medicine, with the aid of external means, was capable of meeting the very lowest condition of vital action compatible with life. Mr. T. has regained his usual health, and has been able to stand the effects of many drunken sprees since then.

By relying so exclusively on the syrup in the above case, I did not suppose I was at all jeopardizing the patient's

life for the sake of *experimenting*, for I had treated many cases of pneumonia previously upon the same plan, with entire and prompt success, but have not always confined myself to that alone. In cases in which there is a good deal of spasm in the lungs, and in such as manifest much active inflammation, I give emetic tartar in sub-nauseating doses, until these symptoms are abated. I have not resorted to the lancet, even in pleuro-pneumonia, for several years, except in one single instance, and then I thought my patient was damaged by it.

Below are a few extracts selected from many others of the same kind upon this subject.

J. E. Fulton, M. D., Big Oak, Miss., says:

"During this winter (1858) I have had seven or eight cases of typhoid pneumonia, in the treatment of which I have confined myself entirely to your practice. *No deaths;* the recovery from eight to twelve days; and upon the whole my experience goes to warrant me in the conclusion that if your plan is assiduously followed out in typhoid cases, the result will be universal success."

J. W. Steele, M. D., Charleston, Miss., writes:

"We have had a great deal of pneumonia this winter, (1858.) Most of the cases that I have had I believe would have been typhoid had I not aborted them. I have had but one case to last over five days, and that was an old man near seventy years old; he was down about two weeks. I seldom ever give any thing except the syrup and nauseants. The syrup meets every indication. Other doctors lose about one-third of their patients."

W. Kirk, M. D., Buckhorn, Miss., writes:

"Typhoid pneumonia has been prevalent here this winter, (1858,) and I have succeeded in curing every case so far. I have always used your syrup when the cases have been ushered in with a chilly sensation, and I know of nothing equal to it in producing a reäction."

The treatment recommended by standard authors in pneumonia is generally of the ultra debilitating kind, such as was pursued twenty years ago. Wood, Watson, Bartlett, all advise a bold antiphlogistic treatment, which consists in

a liberal use of the lancet, tartar emetic, mercury, and low diet. However, in the last edition of Watson, he modifies his practice in this and other inflammatory diseases very materially, confining the use of the lancet to cases of the highest grade. M. Lois, of Paris; Bennett and Tanner, of London, and many others, have also discovered that inflammatory diseases have heretofore been treated too actively; that is, depressing measures have been carried too far; and they now pursue a milder plan, one which does not so speedily exhaust the energies of the system; so that my plan is now in harmony with the general tendency of the age, which evidently leans to the adoption of milder measures. But the utmost extent of the reformation is, that some have "ceased to do evil:" they have not yet "learned to do well;" in this I claim for my plan of treatment a decided preëminence, for it not only does not exhaust the vital powers, but sustains them; and though the remedies used will not make a well man sick, they yet possess great power in controlling disease.

YELLOW FEVER.

Never having seen this disease, it may be considered rather presumptuous to attempt to form any judgment concerning it differing from that of those who have studied it at the bedside. But during the excitement of an epidemic, physicians are usually not in the best frame of mind to philosophize upon the facts presented by the suffering and the dying. It is only after the battle is over that a cool survey can be made of the battle-field, and just estimates formed of the positions which the foe assumed, and the relative advantages of different means which may have been taken for repelling or circumventing him; and one who took no part in the contest, and, consequently, has not his own actions to justify, will be more likely to perceive where an error had been committed or an advantage neglected, than those who were identified with the conflict. I have carefully studied the history of this dreadful disease as given by those who have contended with it, and impartially compared the various modes of treating it which have been

adopted by those who have been most successful, so as to be able to determine, if possible, upon what the success of each depended, and wherein all fall short of meeting the requirements of the case, and will now give the reader the result of my reflections.

The best description I have seen of this disease, and the most rational mode of treatment, attended with the largest success, I find in the Proceedings of the National Medical Association for 1854, by Dr. Fenner, of New Orleans.

Dr. Fenner agrees with most other writers who have closely observed the commencement and spread of the disease, that it has a local origin, and spreads from the point of commencement, not by being carried by *persons*, but by an extension of the infected atmosphere; and that, when once originated, nothing but a reduction of temperature will arrest its progress. Dr. Caldwell, upon this subject, says: "The fact, as here stated, is true, and the problem it presents is difficult of solution: when an epidemic yellow fever has begun its career, in one of our large commercial cities, nothing but a termination of warm weather can arrest it. Local nuisances may be removed, the inhabitants of the city may fly, man may erect artificial barriers, currents of water may be made to flow along the gutters, rains may fall and wash the entire streets, and the winds may blow and change the atmosphere of the place, but all to no purpose. If the temperature of the atmosphere continues high, the epidemic mocks at resistance, until it expires under a regular change of season." Now, were this poison a gas, evolved by the decomposition of animal or vegetable matter, would not removing the filth stay its production? Would not rains wash it away, or winds disperse it? But as none of these things are so, then the poison is not a gas, but must be something which has in itself the power of increase, which can retain its position by its own powers in opposition to wind and currents of water, and which can direct its own course, so that when once it has obtained an existence, it multiplies independent of the original source, and travels "whithersoever it will," independent of currents of commerce or currents of air. It must then be an organ-

ized existence, having a will, or being directed by instinct, and increasing by natural propagation.

The cause of yellow fever therefore is, as I believe, poisonous animalculæ. The effect produced upon the system by this poison is much allied to that arising from the malaria which causes bilious fever.

The symptoms of the first stage of yellow fever, as described by Dr. Fenner, are precisely such as we see in the same stage of high grades of bilious fever. The patient felt chilly, with headache and pain in the back, etc. Went to bed, and covering up warm, a high state of excitement was soon developed, viz.: violent pains in the head and back; skin burning; countenance flushed and swollen; eyes red; pulse frequent, full, and bounding; thirst intense; stomach uneasy, sometimes nausea and vomiting; restlessness, etc. He says, it is evident the symptoms plainly indicate *super-excitement of the whole system*, and the *principle* to be acted on is, "*to restore the equilibrium of the circulation and the excitement.*" Now there is some mistake here; if there were really super-excitement of the *whole* system, there would be *harmony of action*, and there could be no necessity for efforts to restore the *equilibrium*. It is exactly because there is not a *general* over-excitement, that we are called on to interfere. There is great *partial* super-excitement, but it is not general, or the patient would be no worse off than when taking vigorous exercise in obedience to some strong mental impulse. The history of the case up to this time is as follows: a morbid agent has entered the system, and has produced a powerful impression upon the nervous system; so powerful that it has been for the time overwhelmed, and the usual amount of nervous influence not sent out to keep up the various operations of life; hence the chilliness and inclination to go to bed, etc. But presently the nervous system reäcts, and a powerful impulse is sent to every part. The heart and arteries act with unusual power, and the blood, which had been accumulating in the large veins, is sent with force throughout the system; and did it not meet with *resistance*, if there were no *obstruction* anywhere, an equilibrium would unques-

tionably soon be established. But there is an obstruction: the capillaries have been debilitated by the same cause which irritated the nerves, and they refuse to pass the blood on with the rapidity which would be in harmony with the action of the heart and arteries. Hence a distension of the capillaries takes place, giving rise to the suspension of the secretions, swelling and flushing of the countenance, redness of the eyes, restlessness, etc. Now what does this view of the condition of the patient indicate should be done? The doctor says, truly, that "the overheated skin must be cooled, the accelerated pulse must be retarded, the distressing pains, thirst, and restlessness must be relieved. These desirable results may doubtless be effected by different means, but that is the best method which accomplishes the object most promptly, effectually, and *safely*." All those indications I believe would be met by my *fever syrup*, *promptly*, *effectually*, and *safely*. By soothing the excited nerves, and restoring the action of the capillaries, the whole of the phenomena would cease at once. Why this should be so is plain enough: the obstruction in the capillaries to the onward flow of the blood is unquestionably the cause of the protracted increased action of the heart; the dilatation of the capillaries also causes the pain and restlessness, by compressing the fine nervous expansion in their coats, and in the interstices between these minute vessels; the heat is also occasioned by this congestion, so that restoring the action of the capillaries will necessarily remove all febrile phenomena. But in this, as in other forms of fever, if the case were obstinate, I should call to my aid every other appliance which could be made to operate in unison with the principal remedy. The nervous excitement could be greatly controlled by stimulating anodyne liniments; the heat of the surface by sponging with cold or tepid water. But I should never think of bleeding, unless there were actual inflammation. Mere over-action and super-excitement can always be subdued by the means I have stated, without lessening the fountain of life upon which we must depend for the final restoration of health; and if the cause be a poison still floating in the blood, and by its continual

action keeping up the disturbance, taking away a part of that fluid will not lessen the proportion that will be left in what remains, or materially reduce the whole quantity, unless it should be carried to the extent of the case named by Dr. Fenner, when near a hundred ounces had been abstracted, (one gallon;) in this case the poison must have been pretty well eliminated from the system, as the man could have had but a small quantity of blood left to contain it. But I should by no means have been surprised, as was Dr. Fenner, by his dying of hemorrhage in the form of *black vomit.* Such a loss of blood and vitality ought to produce a state of relaxation in the capillaries which would allow the blood to pass unchecked through all the mucous membranes.

I would suggest to any one disposed to test this mode of treatment, that, in consideration of the great irritability of the stomach, which is often present, it would be well to first apply a cloth saturated with chloroform liniment to the epigastrium, and as soon as it begins to burn considerably, give the syrup in a decided dose—say two ounces. If this be rejected, repeat it immediately, even to the third time; but when a dose has been retained, give no more for two hours, withholding all drinks; by this time the medicine will have produced its peculiar effects, and drinks may be allowed as desired.

Believing, as I do, that the cause of yellow fever, though not the same, is allied in its nature to that which produces bilious fever, and that the condition of the system in both is much the same, I would expect to arrest it by much the same means. The course of treatment which has been suggested to my mind by the symptoms, as described by accurate observers, is as follows:

I should bathe the spine and epigastrium with *chloroform liniment,* or laudanum, camphor, and turpentine; give the comp. syrup of valerian in such quantity as the condition of the system would indicate; if vital action seemed to be very low, I should give it as in congestive fever, two or three ounces at a time; I would, at the same time, give quinine and blue-mass in the form of pills; apply an emol-

lient poultice to the abdomen, sinapisms to the feet, and cold applications to the head.

Under the influence of this treatment, I should expect all my patients to recover rapidly, unless the constitution had been previously much injured by other causes, or this disease had been suffered to run until serious lesions had been produced in vital organs. I hope some one may be influenced to give this plan of treatment a trial, should this dreaded disease again visit our land.

DYSENTERIC FEVER—DYSENTERY—FLUX.

As Dysentery, as well as Cholera Infantum, are only serious diseases when attended with fever, I have thought best to include them as sections under this chapter.

Perhaps the author cannot produce any thing better upon this subject than is contained in an article prepared by him, and published in the Nashville Journal of Medicine and Surgery, March, 1853. This article was written soon after the author had been engaged in contending with Epidemic Dysentery in the worst form in which he ever witnessed it; and as it contains much important truth, and has a freshness of thought and accuracy of description, the result of a strong impression which the disease had then recently made upon his mind, he has concluded to copy it entire :

Prof. Bowling :—In the 2d volume (p. 188) of your Journal, you published a note from me upon the use of peach leaf in dysentery. Since then I have had a pretty large experience in that disease, and as I found it necessary to vary my treatment somewhat, I will now, with your permission, offer a few additional remarks upon it.

In July last the flux made its appearance on the southern border of my practice; and although it was confined to a few families, yet for a while it gave me a good deal of trouble. It did not yield readily to the influence of my favorite remedy; a main reason was, that there was great gastric distress, with frequent vomiting or inclination to vomit, so that the tea could not be retained long enough to be of any benefit.

The tongue was usually thickly coated in the middle with white fur, and red at the edges; pulse small and corded; surface covered with a disagreeable perspiration, sometimes profuse and general, sometimes partial and alternating with a dry, hot surface; extremities generally rather cool, often quite cold; almost all complained of a burning sensation in the region of the sternum, commonly about its middle; the discharges from the bowels were generally small, and composed of blood and mucus, and attended with tenesmus; the worst case, however, had no tenesmus, and the discharges were more copious, and consisted of a reddish jelly. Finding I had a more formidable enemy to contend with than I had usually encountered, I had to draw upon other resources to enable me to overcome it. In order to make the peach leaf available, it was necessary to devise a form which would be retained by the stomach. I accordingly prepared it as follows: after reducing the tea to a fluid extract, I added a sufficient amount of sugar to make a syrup; to this I added sup. carb. soda until it became slightly alkaline, and piperin enough to give it a pleasant pungent taste. I also added some of the oil of sassafras, for the purpose of preventing gangrene of the bowels, which I believed to be imminently threatened.

I have long used the sassafras as an antiseptic, and believe it superior to any other known. I learned this property of the sassafras more than twenty years ago, while living in McConnelsville, on the Muskingum river, in Ohio: there being many salt works in the vicinity, which gave employment to several hundred hands, many of whom were dissipated and reckless, shocking bad scalds were of frequent occurrence, by having an arm or a leg immersed in the boiling brine; dangerous sloughing was often the consequence.

In the management of these cases, I found the sassafras poultice more effectual in arresting gangrene and restoring vitality to the parts than any other means, and have used it ever since in all cases of gangrene coming under my treatment, with the most happy effect. I also used it, and found it a valuable means of fulfilling several other indica-

tions, one of which is to prevent narcotic stimulants from producing injurious effects upon the brain. It is invaluable for this purpose; its greatest power is exerted over hyoscyamus and tobacco.

I found the above compound to answer my purpose finely. It was not only well retained, but quieted the irritation, both of the stomach and bowels; brought about a more uniform temperature; dried up the cold sweat when present; in short, answered every purpose for which it was compounded. I kept the abdomen, most of the time, enveloped in a peach leaf poultice, and gave injections of the tea, thickened with flour, to which I added pulverized opium in preference to laudanum: I found it less stimulating and more astringent.

I have long been in the habit of exposing a piece of opium to the air to dry, on purpose to be used in the bowel complaints of children. It is much less offensive to the stomach than the moist article, and is less narcotic and more astringent. It of course must be given in greater quantity. This injection usually gave the patient three or four hours rest from the tearing discharges, much to his comfort and advantage.

I occasionally, however, met with a case in which the irritability of the bowel was so great, and its involuntary contraction so strong, that mechanical assistance had to be rendered to enable the patient to retain the injection. This was afforded by making firm pressure upon the hip. After the lapse of ten or fifteen minutes, the bowel usually ceased to make any expulsive effort, and the pressure was then withdrawn. I have also met with cases the very reverse of the above. There was no tenesmus, no pain attending the discharges, which were tolerably copious, and composed of red jelly, having no fœtid smell, but a peculiar odor, something like that arising from water in which fresh meat has been washed, and were voided almost involuntarily.

On examination, I found the sphincter so relaxed as to bring several inches of the bowel within view, which presented the appearance of raw macerated beef. In these the

surface was always more or less cold, and covered with a dewy perspiration; great thirst and precordial uneasiness. I treated these cases by throwing up cold sugar of lead water into the bowel, and repeating it every few minutes, until I saw some contraction take place; then gave a small injection as above, and made it stay by pressure. I found it best to make my injections very small, not over half a gill. This quantity would be retained without difficulty, when a larger, owing to the stimulus of distention, could not be made to stay a moment.

By the first of August the disease had disappeared in my practice, but still prevailed south and east. In the neighborhood of Lancaster, and east of the Caney Fork, extending into a part of Jackson county, the disease was attended with unusual mortality. At the solicitation of a Mr. Owens of our neighborhood, I visited his son's family, east of the Caney Fork, and found all of them very sick, except himself. After prescribing for them and a few others in the same vicinity, I went to Lancaster to see my friend, Dr. Rose, who I learned was prostrated with this disease.

Here I met with Dr. Sypert, who lived a few miles distant, both of whom strongly solicited me to remain, and try to stay the destruction of human life, which was then progressing at a fearful pace. More than a hundred deaths had been reported as taking place within an area of ten or fifteen miles square in a few weeks.

As there was no sickness of any kind in my neighborhood, I consented to stay, and for about six weeks was unremittingly employed in visiting the sick, except while paying a few hasty visits to my family.

Some perhaps may be ready to surmise that the disease had abated in malignity about the time I commenced treating it, but that was not so, as was shown by the fact that patients continued to die beyond the circle of my practice. Only a few days before I left the neighborhood, I was called some ten or twelve miles to visit a family, where I found one already a corpse, another dying, a third beyond the influence of medicine, and died in eight hours, and a fourth badly attacked, who recovered. This family had been

attended by two intelligent physicians, who, as far as I could learn, had skilfully administered the usual remedies. Dr. Sypert adopted my method of treatment, and was equally successful with myself. Dr. Rose, unfortunately, never regained his health sufficiently to resume the practice until the disease had subsided. I hereby acknowledge the obligation I am under to both of these physicians, for their gentlemanly bearing toward me while practicing in their vicinity. It was greatly owing to their influence that I obtained access to so large a practice.

While in the neighborhood of Lancaster, I prescribed for more than one hundred and fifty cases of dysentery, many of which were attacks of that disease in its worst forms, and yet but two of my patients died, both of which cases I think were rendered fatal by other causes. One was a colored boy living with Wm. Lancaster, about seven years old; had had the whooping-cough very badly for ten or twelve days before taking the flux; found him also full of worms—more than twenty large ones were expelled, and their expulsion produced so much prostration that he was unable to cough efficiently, and died of engorgement of the lungs; the flux seemed to have but little agency in his death.

The other case is remarkable as showing the power of the imagination in determining the issue of a disease. The patient, Miss White, of perhaps thirty years of age, had suffered under a complication of female diseases many years, among which dyspmenorrhœa was prominent. Her mother had died a few days before I was called to the family; three others were simultaneously attacked. I mention these facts in order to show that causes existed calculated to produce a high state of mental excitement. On the second night after the three had been taken sick, she dreamed that she also took the disease, and died on the sixth day. Before night she had the usual symptoms, and was so fully impressed with the belief that the disease would terminate according to her dream, that it was with difficulty I could induce her to submit to treatment; in fact, it was only in my presence that she did. I arrested the disease several

times, but found her as bad as ever on the next visit. And, true to her belief, she died at the precise time she had dreamed.

Before going further into an exposition of my method of treatment in dysentery, I think best to make a few observations on its cause and nature. Every physician to some extent conforms his treatment to his theory, and thus errors in theory beget errors in practice, which I believe has been the case to a most lamentable extent with respect to the disease under consideration. Before, however, undertaking to show what I believe to be its true cause and nature, I will try to remove some mischievous errors upon the subject, the most important of which I consider the opinion that it is of miasmatic origin, and, of course, must be treated as a mere modification of bilious fever. Hence the free exhibition of calomel and quinine, which I am forced to believe have aided the flux in sending more persons prematurely to their final reckoning than would at all comport with the honor of the profession to be fully known.

For a few years past, this disease has been the source of a greater outlet of human life in the United States than perhaps any other; which, I think, ought not to have been the case, and consider it highly important that the medical profession should look into this matter, and see if there has not been a needless amount of mortality. That dysentery has not a common origin with bilious fevers, I infer from the following considerations:

First. It does not necessarily originate under the same circumstances, or in the same localities. I am aware that I have come in conflict with a host of very high authorities, backed by an array of seeming facts, which I cannot now undertake to investigate, but will honestly and fairly state what I have seen and observed upon the subject, on which my own opinions have been founded, and leave it for others, more competent, to investigate the whole ground.

If I can only be the instrument of eliciting a thorough review of the subject, I shall have accomplished much. I reiterate the assertion, that flux does not necessarily originate under the same circumstances or in the same localities

with bilious fevers; that it often does, I admit; and that it is often complicated with them, I also admit; which I presume has been the foundation of the mistake with regard to their being of the same family.

Large and densely populated cities are known to be almost exempt from miasmatic fevers. Can this be said with regard to dysentery? I think not. In many localities, which are annually visited by miasmatic fevers, dysentery only appears occasionally, and in others not at all. Poor, elevated situations, such as the barrens of Warren, White, and Jackson counties, where bilious fevers have hardly ever been seen, are as subject to dysentery as the Mississippi bottom. During the two past years these counties have been severely scourged.

Second. Dysentery has a different manner of spreading from miasmatic fevers. The latter attack individuals over the whole extent of a malarious district, pretty much simultaneously; but dysentery usually commences at a point, and radiates more or less extensively—often stops within very narrow limits, often spreads in one or two directions, leaving intermediate neighborhoods, similarly circumstanced with regard to the production of malaria, and equally subject to malarious diseases, entirely untouched.

I had an unusually favorable opportunity of observing the manner in which the disease extended itself in the Caney Fork country the present season. The *ridge* runs for many miles almost parallel with the river, at a distance of about eight or ten miles; hollows put out from the river, and run almost directly to the ridge, divided from each other by high sharp spurs, making off from the main ridges, thus forming very marked natural boundaries to each neighborhood. In order to be better understood in what I shall say upon this subject, I will name the several hollows as they are familiarly known in the vicinity. The lowest one on the river, which I shall mention in this connection, is Dillard Hollow; branching off from the same mouth, is Beller Hollow; about a mile above, is Smith's Hollow; and something like the same distance above this, is Fitch Hollow; two miles farther up, we find Rock Spring Branch;

and three miles above that again, we find Wolf Creek, which is as high as my observation extended. I will premise here, that the flux commenced on the west side of the river, where the country is not so well defined by natural boundaries, and where its manner of spreading could not be so well designated; but it soon crossed the river at several points, and we will commence by noting its progress after crossing opposite the mouth of Dillard Hollow. It took up this branch, attacking a few families living in the very lowest situations, but as it ascended, it spread up into the side hollows, and visited nearly all the poor families that had made a lodgment between the hills. It thus continued to travel upward until it reached the main ridge, and immediately opposite the head of Dillard Hollow. From here a detachment took down the ridge westwardly, visiting several families, until it reached a break which makes down toward what is called Hell Bend, down which it travelled, and visited almost every family in the bend. Another detachment took along the ridge eastwardly several miles, and sent off a force down a break, making into Snow Creek, along which I learned it travelled to its mouth; but the main body seemed to keep along the ridge about a mile farther, where it turned down a break into Smith's Hollow, attacking nearly every family, and more than half the individuals living in it. Now, Beller Hollow lies between this and Dillard Hollow, and is an almost exact counterpart of them, and yet it remained entirely untouched throughout. About the time it crossed the river into Dillard Hollow, it also crossed over and took up Rock Spring Branch, passing by Fitch Hollow, in which there never occurred a single case, except two families living immediately on the river; but it travelled up Rock Spring Branch to its head, not escaping a single family, and assailed a family living on the ridge directly opposite its termination. From here it spread over into Jackson county, beyond the sphere of my observations. Near the same time, or a little earlier, it crossed over and visited Wolf Creek, again skipping over Indian Creek, which remained unmolested many weeks. It assailed every family for about four miles, when it suddenly stopped,

and the force diverged; one part taking up a side hollow to the right, and spreading into the flat woods, and the other taking up a branch to the left, passing over a gap into Buffalo Valley, which communicates with Indian Creek about three miles from the mouth of the latter. In Buffalo Valley it lingered many weeks, few families, or even individuals, escaping; finally it extended down to where it communicates with Indian Creek, spreading both up and down it throughout its whole extent, with rather more than its usual malignity.

I must here say something more about Buffalo Valley, which presents some very striking peculiarities. It is about ten miles long, and wide enough to afford many very fine farms; is the only outlet for the water which falls on some sixty or eighty square miles, and yet it affords no branch, not even a gully can be found, to indicate that water ever runs through it, even in the wet seasons. This is explained by the fact that the subsoil is composed of very coarse gravel, overlaid by a stratum of rich loam and gravel, through which water finds its way as fast as it falls, and is doubtless conveyed to the river through a subterranean passage. Now is this a likely locality for generating malarious diseases? I learned that none had ever been supposed to originate there, and yet here the flux made one of its heaviest sets. I argue, therefore, that it is not of miasmatic origin.

The above is a correct history of the manner of the spread of this disease in the above region of country, as I observed it myself, and learned from those living in each locality. I will now ask, Is this the usual mode of progression observed by malarious fevers? No one will say that it is. The inhabitants of the above country are well acquainted with the habits of bilious fevers. They commence on the river, and extend occasionally some distance up the hollows, but never climb the *hills*, much less ascend to the summit of the *ridge*. Now if flux arises from the same cause, how can we account for the fact that notwithstanding miasmatic fevers have prevailed along the river

more or less every year, yet a case of dysentery was never seen in that country until the past season?

It has now been made evident that flux does not necessarily prevail in the same manner; and I now say, in the third place, it is not ushered in by the same symptoms. There is a great similarity in the first stage, or what are denominated the premonitory symptoms of all general fevers; such as lassitude, weariness, loss of appetite, disturbance of the head, aching or soreness of the limbs, etc.; few cases are ushered in without being preceded by some or all of the above symptoms, which is not the case with flux. It most usually has no premonitory symptoms; the first indication of the approach of this disease is the disease itself, viz.: the peculiar dysenteric discharge. Sometimes a little muco-serous discharge precedes it; but in the great majority of cases which have come under my observation, the very first intimation of an attack was a muco-sanguineous or gelato-sanguineous discharge, attended by more or less tenesmus, a sense of heat and general uneasiness in the lower part of the abdomen, the individual feeling otherwise perfectly well; appetite and digestion good as usual; no disinclination to muscular exertion; and, unconscious of their danger, many continue to eat and work as usual for a day or two after the attack; general disturbance of the system seldom took place before the second or third day of the disease, and, if proper treatment was instituted in time, very seldom took place at all, which was the case in an attack which I had myself. After partaking of my breakfast with usual appetite, I retired, as is my custom, and had a natural alvine discharge, without any thing peculiar about it whatever; but in half an hour after, in attending to another call, I passed a considerable amount of gelato-sanguineous matter, entirely unmixed with any of the usual contents of the bowels. It was preceded by some slight pains in the lower part of the abdomen, and attended with tenesmus and burning sensation in the lower bowel. As this was the usual mode of attack in the worst cases, I lost no time in resorting to my usual remedies; refused to ride

until in the latter part of the day, when, finding but little uneasiness, I commenced my circuit again, and felt no more of the disease, except some uneasiness in the lower part of the abdomen, which continued several days. Many other cases, could be given similar to this, which served to convince me that the flux is purely a local disease at its commencement, and that the fever which follows is entirely secondary. But with regard to premonitory symptoms, it is true that some cases are preceded by more or less indisposition; but as I could discover no regularity or similarity in such cases, I was led to look upon them as purely accidental, and not necessarily connected with the subsequent attack. I saw a few cases preceded by the common symptoms of bilious fever, and several were evidently complicated with enteric fever. But dysentery is not only not ushered in by the usual symptoms which constitute the first stage of miasmatic fevers, but, in the fourth place, does not primarily or usually affect the same organs. For example, the liver and spleen seem to bear the onus of attack in bilious fever; in flux they are seldom involved, and never, I believe, except when complicated with the former disease. No physician would risk his reputation by pronouncing a case an attack of bilious fever, in which there was no derangement in the functions of the liver; the universality of hepatic derangement in miasmatic diseases has given the great emulgent, calomel, such a world-wide reputation in their treatment; and a natural bilious discharge is as confidently expected to be followed by an improvement in these diseases, as an effect is expected to follow its cause. But in flux, the liver usually performs its office as in health, and a natural bilious discharge, so far from affording relief, invariably aggravates the symptoms. So uniformly has this been the case in every instance coming under my observation, that had it not been necessary for the general health of the patient that the liver should continue its accustomed action, I would have wished its secretions suspended during the continuance of the flux. This satisfactorily accounts for the pernicious effects of calomel in the disease. We all know the griping quality of what are

called *calomel* discharges; they often give much torture in passing through the bowels in a healthy condition; how could we, therefore, expect any thing less than insupportable tormina to be the consequence of their passage over the abraded and inflamed mucous surface in dysentery, and a consequent aggravation of all the morbid associations which have been set up in other organs?

The nervous system often suffers an amount of prostration from this kind of over-stimulation, such as to lead the administrator to conjure up a *congestive chill*, and to continue the drama by the administration of quinine, until its finale is made tragical indeed.

I have said that the spleen is another organ which principally suffers in miasmatic fevers; hence the efficacy of quinine in this treatment, which it is now ascertained acts specifically upon that organ; but it also acts powerfully upon the brain and great nervous centres, perhaps by direct stimulation through the medium of the circulation, producing a most happy effect in the depressed stages of miasmatic fevers, but a most disastrous one in the depression occasioned by excessive irritation in dysentery.

Another organ primarily affected in miasmatic fevers is the stomach: loss of appetite, loathing of food, nausea, etc., are among the best diagnostic symptoms of an attack, which is not the case in flux. The stomach is rarely at all affected at the commencement of this disease; food is taken with as good a relish as usual, and digestion is performed as well as common. It is only after the local disorder has continued with a sufficient intensity long enough to get up spinal irritation, that the stomach becomes involved, after which it often suffers severely.

Recapitulation:—Dysentery does not necessarily prevail under the same circumstances or in the same localities with miasmatic fevers; has a different mode of progression; is not ushered in by the same symptoms; does not primarily or necessarily affect the same organs, and is not relieved by the same remedies; which reasons appear to me sufficiently conclusive that they have not a common cause. Others have supposed dysentery to be the effect of atmospheric

vicissitudes; but that any agency operating so universally and continually as these should be the cause of a disease appearing only occasionally and within limited boundaries, appears to me to be very improbable. Neither do I believe it to be *contagious* in any proper sense of that term. I never could trace it from individual to individual. Those who visited the sick did not seem to be more subject to an attack than others who did not. It visited families that lived remote from any others, and it often attacked those members of a family first who had never been from home.

The inhabitants of the two hollows mentioned above, which escaped the disease to my certain knowledge, frequently visited the adjoining affected districts. The only theory which will at all agree with the history of this disease with regard to its erratic mode of appearing and extending itself is, that it is caused by the poisonous influence of a species of animalculæ, whose habitudes lead them to make a lodgment in the mucous membrane of the lower bowel, which is selected by them as a suitable nidus into which they can burrow and hatch another brood.

It is now believed, if it has not been positively proven, that cholera is caused by an insect; and there are many points of resemblance between it and dysentery, both with regard to their manner of spreading, mode of attack, and the manner in which they affect the system. They differ, however, in the part of the alimentary canal in which the onset is made; the cholera choosing the stomach and upper bowels, and the flux the lower bowel alone. These and some other dissimilarities are the result of the different instincts or habitudes of different species of animalculæ.

It was when on Caney Fork, contending with the flux, and observing its manner of spreading and mode of attack, that I first conceived the idea of its being of animalcular origin: since which time I discover I was anticipated, this opinion having been formed and expressed by others.

No one viewing the disease under the circumstances which I did could resist the above conclusion, after once turning his thoughts in that direction. Its wayward and whimsical mode of progression is consistent alone with the

fickleness of insect migration. The most prominent characteristics of the disease are perfectly consistent with this theory, and may be beautifully explained in unison with it. The first discoverable symptom is that which might arise from the stimulation produced by the titillation of the mucous membrane by the little intruders on first taking possession of the part, viz.: an increase of the natural secretion; but presently they make an entry into the substance of the membrane, destroying its texture and exposing the open mouths of the capillaries, irritate the nervous extremities with which the part is so abundantly supplied, and, of course, get up a state of high morbid excitement—the result of all which is general uneasiness of the parts, discharge of mucus mixed with the blood exuding from the exposed capillaries, and a constant feeling as if something was wanted to be expelled, with spasmodic efforts of the bowel in making these expulsive efforts, etc. This continual teasing and irritation of the sentient nervous extremities, finally convey sufficient morbid impression to the spinal column to get up morbid excitement in it and the other great nervous centres, which is soon conveyed by the nerves to every part of the organic structure, and general disease is the consequence; each organ and tissue complaining according to its peculiar mode: the brain by disturbance of ideas, giddiness, vertigo, stupor, etc.; the stomach by burning, nausea, vomiting, etc.; the kidneys by increased, depraved, or suspended secretions; the skin by constriction, dryness, morbid exhalation, etc.; and the whole system by a sense of ill-being. This state of things continues until the enemy is either destroyed, expelled, or has gone through its period of incubation, and is expelled with the mucous membrane: provided, however, that the patient should escape gangrene, or the system should not sink under the pressure of so much morbid action, before the disease has run its course.

That flux is not merely ordinary inflammation of the mucous coat of the lower bowel, I infer from the fact that the common symptoms of inflammation are not sufficiently prominent; they are rather those of irritation, and are not

relieved by the means which usually subdue common inflammation. An abstraction of an equal amount of blood, commonly discharged in dysentery, from the capillaries of an inflamed surface, would, of itself, arrest any ordinary inflammation. Blisters, which exert such a powerful control over inflammation, are without benefit, if they are not positively injurious, in this disease. It is therefore evident that the disease of the bowel in flux is of a specific nature, gotten up by the agency of a specific cause; and that that cause is the presence of poisonous animalculæ, is rendered still more probable, from the fact that those means which are known to be destructive to insect life are most effectual in arresting this disease.

This is eminently true with regard to the sassafras. I have experimented pretty fully with this article with reference to this subject, and have found it to be immediately fatal to all insects to which I have had an opportunity of applying it. It is perfectly amusing to witness its application to a woolly puppy, or a little negro's head. It will clear them of inhabitants in less time than I can tell it. A little applied to my own person has often made an army of *bed-bugs* retreat more precipitately than Bragg's battery ever did the Mexicans.

During the winter I have carefully examined every author within my reach, and have overhauled old files of medical journals, and have found that the operation of every remedy which I can find to have been used with any considerable degree of success in dysentery, may be rationally explained in view of the above theory. They all seem to perform their beneficial effect in one of the three following ways: either by destroying the animalculæ, expelling them mechanically, or by counteracting their injurious effects, enabling the system to sustain the injury until they run their race.

The most efficient means which has hitherto been generally used, calculated to fulfil the first indication, that is, to destroy the animalculæ, is spirits of turpentine. Many physicians have tested its beneficial operation in flux. But its use is attended by a very serious objection. Every

practitioner who has had much experience in this disease, has observed that dysuria is a very common and troublesome attendant, owing to the close sympathy existing between the lower bowel and the kidneys and bladder. The use of turpentine serves to aggravate this difficulty, and many cases of permanent injury to the kidneys have come under my observation occasioned by its use, both in flux and typhoid fever. As this has become a very fashionable remedy, it would be well for the profession to look a little closer to the result of its improper exhibition. I have had unpleasant effects produced even by its external application, both on the kidneys and stomach, and was led to devise some means of avoiding the difficulty without giving up the use of so valuable a curative means, and succeeded by combining it with nearly an equal quantity of ammonia. In this form it is not absorbed, and its efficacy as a topical application is very much increased. If any one still doubts cuticular absorption, let him try the experiment of making friction on some part of his person with a flannel cloth, saturated with warm turpentine, and if he fails to detect the violet odor on his urine, it will be because he has a *bad cold.*

The peach tree and sassafras are not only more effectual than the turpentine in destroying the animalculæ, but are less offensive to the stomach, and, in place of increasing dysuria, operate as a preventive. None happened in my practice.

Another article which has been much relied on in private practice, and is favorably mentioned by several authors, is sulphur, which, no doubt, owes what advantage it possesses in the cure of flux to its property of destroying insects. The same is true of camphor, and some other articles of less note. The second indication, that is, to expel the enemy *per force*, is often accomplished by active purgation.

Many of our best writers agree as to its advantage, but differ widely in the use of the means employed. The objection to the use of drastic purgatives in this disease is, that if they fail in expelling the enemy, they do not fail in

lessening the powers of the system to bear up under its subsequent depredations.

The third indication, that of enabling the system to sustain the injury until the disease runs its course, will include much the largest class of means which have been used with advantage in this disease; prominent among them are the different preparations of opium, which act beneficially by lessening the irritation in the bowels, subduing the excessive general nervous irritability, and breaking up morbid associations. Next in efficiency to opium are poultices and fomentations, which serve to equalize temperature, and appease the over-excited nervous extremities. An occasional mild purgative is also beneficial, by preventing any accumulation of offending matter in the upper bowels. Many other means have been resorted to, with more or less advantage in fulfilling this indication, but I shall not pursue the subject farther, but will now give my own method of treatment in a condensed and connected form, so as to be better comprehended.

And first, I will give my manner of preparing what I call *compound syrup of peach leaf.* I take as many peach leaves as will fill a ten-gallon kettle, and weight them to prevent their rising, and add water until they are covered, bring it to a boiling heat, and keep it at a simmer for two hours; take out the leaves; strain and settle the infusion; then evaporate by a moderate heat, until it begins to thicken; there will now be about one quart; to this I add five pounds of sugar, and, when it is melted, sup. carb. of soda until it ceases to effervesce; then add one drachm of piperin, finely powdered, and one ounce of oil of sassafras; after stirring them together effectually, and the syrup has considerably cooled, I then add half a pint of brandy. I have usually made use of a good article of American brandy for this purpose. Of this syrup I give a tablespoonful every hour, until the disease yields. If it produces any unpleasant excitement, I lessen the dose, and always discontinue it during sleep. With regard to injections, what I have said in the first part of this paper is sufficiently specific, and will not be repeated. In most cases, by adding a little

morphine to the syrup, a necessity for the use of injections is superseded; the abdomen should, most of the time, be enveloped in a peach leaf poultice, or flannel saturated with the infusion. It is generally necessary once in twenty-four hours to administer a mild purgative, in order to obtain a fecal discharge. I prefer epsom salts to any other for this purpose.

Occasional symptoms must of course be combated by such appropriate remedies as the judgment of the practitioner may decide to be indicated in each case.

I have not found it necessary to be very strict with regard to diet; in most cases the powers of the stomach are but little crippled, and notwithstanding there may be considerable nervous irritability of that organ, yet it generally performs its office of digestion very well, and I found it best to give it employment. I consequently allow mild digestible food to be taken quite freely; even a small piece of fried chicken has often been allowed, much to the gratification of the patient, by removing the nausea, and appeasing the craving of the stomach. No unpleasant consequence ever followed the indulgence. Other physicians often attributed the death of their patients to some improper indulgence in food. Fatal relapses were often said to be produced by this cause, and perhaps justly. But I had no relapses, and allowed my patients great latitude in eating. My course of treatment, by sustaining the tone of the stomach and preserving the general strength of the system, prevented any considerable debility ensuing, and, consequently, convalescence was neither tedious nor precarious. I will here give a list of a hundred cases, taken in connection from my day-book, showing the time each patient required my attendance. Many were visited for a day or two after convalescence, and all were directed to continue the remedies for some days after decided convalescence, in order to insure its stability. The time embraced in the following list is that in which the patient was sick enough to require being visited. The protracted cases were all complicated with other diseases:

29	cases were visited	only	1 day.
37	"	"	2 days.
14	"	"	3 "
7	"	"	4 "
9	"	"	6 "
3	"	"	9 "
1	"	"	12 "

One chief cause why so few visits were necessary in the above cases, may be found in the manner in which I conducted my visits: my habit was, when called to a new case, if it was a bad one, to tarry with my patient until I had arrested or materially controlled the disease, even if it required several hours' detention; then, by leaving full and specific directions, the case was often managed without another call. In this way I was enabled to attend to many more cases than I possibly could have done by paying flying visits, and repeating them daily.

And though this kind of slow movement often kept new calls waiting until patience was well-nigh exhausted, yet I found that they only had to suffer a few additional hours, as the disease, when once fully formed, usually became no harder to manage for several days.

Since the above period, I have kept myself posted as to the prevalence of dysentery in that region of country, and I find that a few scattering cases have occurred every summer, within the boundary of its former ravages; but that every year it has prevailed epidemically, beginning at one or more points near the margin of the space over which it had travelled the previous season. During the early part of the present summer it prevailed over a considerable space of country, commencing some miles west of the Caney Fork, and extending in the direction of Nashville. But few escaped an attack, and, as it was attended by physicians who obstinately adhered to the use of calomel treatment, the mortality was fearful: over twenty deaths occurred in two families. This disposition of epidemic dysentery to commence one season at a point near which it had stopped the previous year, has been observed and spoken of by

others; several instances are given in reports on epidemics in the "Transactions of the American Medical Association;" but as they are not at hand just now, I cannot refer to the page.

I might here close my remarks on dysentery, but think best to make a *resumé*, so as to leave the reader's mind distinctly impressed by the most important points, especially in the treatment. It is much to be lamented that there is still no improvement in the management of this disease throughout the United States; the yearly bills of mortality show this to be so; and physicians generally have not yet learned that the exhibition of mercurials is very generally associated with death in typhoid dysentery. There is still no approach to uniformity of treatment, even in recognized varieties, except so far as giving mercurials is universal.

Perhaps no disease is more variously treated in the United States than this. This want of uniformity in its management is no doubt partly owing to a want of correct knowledge of the nature of the malady, and partly arises from the diversity of character which it assumes in different localities and at different times. The particular disease known as dysentery, or *flux*, is undoubtedly a local affection, consisting in a certain amount of irritation or inflammation of the mucous lining of the lower bowel; but this local disease cannot exist long or intensely without involving the general system, manifested in the form of *fever;* and the fever will take on the particular form or type to which the system has been predisposed by atmospheric or epidemic influences; or the fever may have been *first* set up, and the dysenteric symptoms superadded afterward, or both may be developed at the same time by the same exciting cause. Hence, we find flux existing as an independent disease, unaccompanied with any fever; and we find it associated with the different grades of miasmatic fever and typhoid fever; and we see it arising in the course of these fevers; and see these fevers developed in the progress of independent cases of flux. The only sensible way, therefore, of viewing dysentery, is to first consider it as a distinct local disease, and to contemplate the associating fever

also as an independent affection; and then consider in what manner each influences the other.

Dysentery proper consists of a peculiar kind of irritation in the mucous membrane of the lower bowel, exciting a more abundant discharge of the natural mucus of the bowels, attended with a sense of uneasiness, and more or less burning pain and increased contraction of the lower bowel, producing a prolonged disposition to remain at stool, with more or less tenesmus or straining. As the disease advances, the mucus is generally exchanged for jelly mixed with blood. All this may take place, and yet the individual continue in nearly usual general health; having no chills, no fever, no loss of appetite; and, except when suffering paroxysms of tenesmus, no feeling of indisposition of any kind, showing that the disease is as yet purely local. In this form, and in this stage, it is very easily managed. For twenty years I have relieved all such cases in a short time by simply ordering *peach leaf tea* and injections of starch and laudanum. Any part of the peach tree will answer for making the tea, as well as the leaves. In the winter I use the twigs. The dose is about a third of a teacupful every hour or two; an injection of half a gill of starch or flour gruel, with twenty to forty drops of laudanum, or three or four grains of denarcotized opium, should be given after each discharge. If there should not be fecal discharges produced by the tea, I give epsom salts or seidlitz powders. If there is considerable tenderness of the abdomen, I direct a poultice of peach leaves, or, in their absence, a tea of the bark or twigs, thickened with wheat bran. But if the flux is complicated with fever, more than these means, which are all directed to the local affection, becomes necessary to be done. The fever must be met by such treatment as will control it; and a reason why so great a mortality has attended this disease in many parts of the United States, of late years, is doubtless because it was complicated with *typhoid fever*, a disease which, under the ordinary treatment, runs a tedious course; a disease which is attended in its progress with ulcerations of the upper bowels, which, by concert of action, will keep

up the dysenteric inflammation of the lower bowel, and both, combined with the depressing nature of the fever, become more than the system can endure, and it sinks under it; and more especially if the depressing influence of mercurials is added. Human nature was not designed to bear up under all these, "and it won't." By the aid of my plan of aborting typhoid fever, this form of dysentery becomes as manageable as any other. All that is necessary in the case is, to add a tablespoonful of the comp. syrup of valerian to a cup of the peach leaf tea, and give a third of it every hour. As the comp. syrup of peach leaf contains the essential properties of the fever syrup, it alone will control it, or they may be given alternately. In a few days the *fever* will be broken up; and even should the dysenteric symptoms continue a few days longer, the patient will steadily improve in general health. But if the fever should be of the bilious kind, I still do nothing more, as the same treatment will break that up with equal facility, except there should be chills, and then the addition of a few grains of quinine will meet that feature.

The following extracts will show what success has attended my plan of treating dysentery in the hands of others:

Dr. J. E. Fulton, Big Oak, Miss., writes:

"I have had an opportunity of trying your plan of treatment in dysentery, and in my hands it has come fully up to your representations."

Dr. A. M. Walls, Madison Cross Roads, Ala., says:

"I have treated a few cases of dysentery with the peach leaf tea, etc., in all of which it proved successful."

Dr. W. Shapard, Scottville, Ky., writes:

"I have used your treatment for dysentery in my practice with great success."

Dr. W. M. Cook, Silver Springs, Tenn., says:

"I have used your treatment for flux several years, and find it just what you represent it."

Dr. R. Smith, Thebes, Ill., says:

"I am much pleased with the effect of peach leaf tea in dysentery."

Dr. John K. Cypert, Monterey, Tenn., writes:

"I am highly pleased with peach leaf tea in the treatment of dysentery. I have derived great advantage from it, but do not consider it a specific."

Dr. J. G. Boyd, Shady Grove, Tenn., writes:

"Your plan of treating dysentery has been entirely successful in my hands."

CHOLERA INFANTUM, OR SUMMER COMPLAINT.

Children during the second summer often have a hard struggle for existence. The food which nature furnishes for early life being withheld, or proving inadequate to their sustenance, they are forced to depend upon other kinds not so readily assimilated; and not having the teeth or digestive powers to manage properly the ordinary diet taken by older members of the family, and possessing a higher degree of irritability than those of maturer years, the half-digested food often acts as a direct irritant to the coats of the bowels, causing increased secretion and increased peristaltic motion, constituting diarrhœa. Thus the food, instead of being appropriated to the nourishment of the system, weakens it by acting as an irritant, causing the child, as it decreases in strength, to increase in nervous excitability, until some exciting cause, as change of temperature, or the irritation of a protruding tooth, so impresses the nervous centres as to get up general nervous disturbance, which, connected with capillary debility, we have seen constitutes the first stage of fever. Reäction takes place as in other fevers; and as the stomach and bowels in this case are already in a state of morbid excitement, they constitute the weak point, and the onus of the disease is thrown upon them. The indications to be met in this disease are, therefore, to remove the excessive irritability of the stomach and bowels, to quiet nervous disturbance, restore capillary action, and then improve the tone of the digestive organs so as to guard against relapse.

If the case be taken in time, before *fever* is set up, the treatment is very simple. The diet of the child should be restricted to such articles as are most digestible, least irri-

tating, or subject to ferment—such as boiled milk and stale bread, rice, sago, etc. To improve digestion and restore the tone of the stomach and bowels, I prefer the following formula above any I have tried, viz.: good French brandy, half a pint; pulverized cinnamon bark and nutmegs, each, two drachms; piperin, ten grains; loaf-sugar, a fourth of a pound. Dose, one or two teaspoonfuls, combined with four times its volume of milk, repeated three times a day, or oftener if required; or it may be added to a cup of boiled milk at meals. If the disease be suffered to continue until fever is set up, and there is vomiting, swelling and tenderness of the abdomen, etc., I direct a *lye poultice* to the bowels, and a grain of *calomel* every three or four hours, until bilious discharges are obtained, and then commence the treatment as before directed. Sometimes, however, the fever is truly *malarious*, and, besides the above remedies, requires a few grains of quinine.

Sometimes the thirst in this disease is perfectly intolerable; in which case, though the surface may be cool, we may know there is great internal heat. I manage such cases by applying a cold wet cloth to the abdomen, renewing it as it becomes hot; for, notwithstanding the cool surface, the cloth will soon absorb the heat from the overcharged internal surfaces; at the same time I administer internally a weak solution of epsom salts, given in small quantities, and frequently repeated. I usually add some sup. carb. soda and a little Dover's powder. My formula is, epsom salts, three drachms; sup. carb. soda, one drachm; Dover's powder, twenty grains, dissolved in twelve ounces of water, of which I direct a tablespoonful every hour. This will be drunk with avidity by the little parched sufferer, and should be continued until the vomiting ceases and the thirst is partially allayed, even should it appear to increase the purging. No other drink, or any thing else, should be taken on the stomach until the vomiting subsides.

The interval should now be extended, and a tablespoonful of new *cream* given between each dose. The cream will not coagulate, and is exceedingly soothing to the irritated lining of the stomach, and affords the most readily assimi-

lated nutriment that can be selected, which the famishing child so much needs. After the patient has become relieved by the above means, the *anodyne carminative*, or brandy mixture, the formula of which is given above, should be commenced, for the purpose of restoring the vital powers. Sometimes the constitutional disturbance attending this disease is not sufficient to produce fever; the child keeps up, retains some appetite, though morbid, occasionally vomiting, and once, or oftener, in the twenty-four hours, has an attack of diarrhœa; which, from its violence, seems as though it should produce speedy prostration, but it stops of itself, and the little fellow falls asleep, and presently awakes to cry for food. But emaciation goes steadily on, the abdomen becomes tumid, the face and hands puff, and, if the disease is not arrested, the child must die ere long. In these cases I begin with the saline mixture recommended above, and regulate the diet as before directed, usually giving three or four grains of *Hyd. cum Creta* [Blue powder] every night. This treatment should be continued three or four days, when it will usually be safe to commence the *anodyne carminative*. A multitude of poor little shrivelled specimens of humanity, whom to wish dead seemed to be benevolent, have by this means been restored to perfect soundness and plumpness.

Dr. J. S. Burford, Whiteville, Tenn., writes:

"I have a beautiful little daughter, now in the enjoyment of the most perfect health, who was brought down to the verge of the grave by that great *baby-destroyer*, 'cholera infantum,' upon whom every means were employed without avail, until treated according to the plan you recommend. It acted 'like a charm.' I feel that I am indebted to you for her life."

The treatment recommended by authors, both for cholera infantum and dysentery, is so diffuse and so unsatisfactory, and, it might be added, so contradictory, that it has not been thought necessary to trouble the reader with it. The most sensible treatment may be found in Wood, to which the reader is referred.

CHAPTER VII.

ERUPTIVE FEVERS.

VARIOLA, OR SMALL-POX.

Notwithstanding the discovery of Jenner, which justly immortalized him, through the inattention of the people this dreadful disease almost yearly makes its appearance in our large cities, and along the great thoroughfares. Hence it becomes necessary that everybody, and especially every physician, should be able to recognize the disease, and give it the best treatment that the light of the present age affords.

The forming stage of this disease cannot be distinguished from that of measles, scarlatina, or, in fact, any other fever; it is only when the eruption begins to appear that it can be identified; and here I will hazard a statement, which will run foul of authority—that is, that this disease cannot be communicated until after the eruption is pretty well formed. Much inquiry and close observation have fully convinced me that this is the case; and by knowing this to be true, much alarm and uneasiness may often be prevented. I am aware the contrary is true of measles and scarlatina, the most contagious period of which is during the preliminary fever. If this were so of small-pox, the disease would, every time it makes its appearance, spread among all the friends and visitors.

When the eruption does make its appearance, it can be immediately recognized by any one who will preserve the

type in his mind, it being unlike any other. The first appearance is a few very small and exceedingly red points, scattered over the breast, and next appearing on the face. These points are smaller and of a deeper scarlet red than any other eruption for which it could be mistaken. Twenty-four hours subsequent you will find the number of points increased, sometimes very greatly, and now are more numerous on the face: hence, I suppose, the mistake of authors that it always begins on the face, the few that first appeared upon the breast having been overlooked. By this time the first points that made their appearance have begun to fill with a clear limpid secretion, and have lost their peculiar redness. As these vesicles enlarge, they become surrounded by a circle more or less red, according to the amount of fever which is present.

These vesicles soon acquire a slight depression in the centre; but in the course of four or five days they again assume the rounded form, owing to the lymph giving place to suppuration. They now are much enlarged, and have acquired an opaque yellowish appearance.

In three or four days more, the pustules begin again to sink in the centre, and often part of the matter oozes out, yielding an exceedingly unpleasant odor, and so peculiar as to be always readily recognized afterward. In five or six days more the scabs fall off, leaving deeply discolored spots, and often unsightly pits.

The disease as described above is known as *distinct* small-pox. Sometimes the pustules, particularly on the face, are so numerous that they run together, making large continuous patches; this is known as *confluent* small-pox. Then, again, the pustules may merely touch without running together, which is called *semi-confluent.*

The stages of this disease are nearly as follows: Period of incubation, or time between receiving the contagion and accession of fever, twelve days; period of fever before the eruption appears, three days; pustular stage, four days; drying stage, four to six days. This is true with regard to the eruption on the face and breast; that upon the body

and extremities, by appearing later, will also be behind in all the stages.

From the time that the fever commences until the eruption is fairly out, the patient is commonly quite sick; complains of headache, nausea, pains in the bones, considerable fever, etc.; but when the eruption is fairly out, all these symptoms generally give way very suddenly, and the patient complains but little, except of the surface, until the suppurative stage commences; secondary fever is now set up, which often runs very high, and in confluent small-pox often causes death.

TREATMENT.—The treatment of small-pox was once perfectly murderous—giving hot teas and stews, keeping the patient shut up in a close room, and forbidding water.

This same treatment is yet followed by some of the ignorant pretenders to whom the management of this disease is sometimes committed. At the present time the received practice is palliative; viz., in the first stage, while there is much fever, cooling drinks and very light nourishment, with occasional spongings of the surface with tepid water, and keeping the bowels gently open with seidlitz, or a little epsom salts or cream of tartar, and a few grains of Dover's powder at bedtime, to allay restlessness and procure sleep.

When the pustules commence maturating, if the fever is of rather a low type, and the pustules fill tardily, nourishing soups and wine should be given. At every stage of the eruption the patient should be anointed with olive oil at least once a day; and when the matter commences oozing from the pustules, the surface should be thoroughly cleansed with soapsuds, and then oiled. This treatment is generally successful; still, deaths are not unfrequent, and deformity by pitting quite common.

Since adopting my present plan of treating fever, I had rather desired an opportunity of testing it in small-pox. My opinion was that it would prevent secondary fever, and, by maintaining a vigorous condition of the capillaries, prevent the destructive ulceration of the true skin, which occasions the pitting.

Last winter my desires were gratified. I was called to treat four cases of genuine variola, and a number of cases of varioloid. I felt so confident that I would prevent pits, that I assured the friends that I would do it, if they would attend to my directions. During the vesicular stage I gave my fever syrup in teaspoonful doses every two hours; allowed plenty of cold water, with cream of tartar sufficient to render it pleasantly sour; sponged the surface when hot, and oiled it when they complained of itching. In a few days all constitutional disturbance subsided, and my patients sat up, were cheerful, and had good appetite, which was rather liberally indulged. When the pustular stage set in, I ordered the syrup to be given in half-tablespoonful doses, and had the surface well washed with tepid soapsuds every day, and then oiled. No secondary fever occurred, and hardly any inflammatory action; so that the areola was quite indistinct, the pustules, when in their full rounded stage, looking like little balls of cotton sticking on a sound surface; and, as I expected, when the scabs scaled off, there was not a mark left, except three on one little fellow's forehead, who repeatedly rubbed off the scabs.

Now these cases were not naturally milder than common. A negro man who contracted the disease at the same time and from the same person, and who was not considered worse than my cases, was treated by another physician, and died with secondary fever. One of my cases was partly confluent; the pustules over all the face and breast slightly touched each other, and in several places on the face ran together, making patches as large as a twenty-five cent piece; and yet, when these scaled off, it was perceived that the true skin had not sustained the slightest injury.

I visited the family (Mr. Edmunds', of the lower suburbs of Nashville) about a month since, and found all the children as clear of evidence of having had small-pox as they were before having it, except the little fellow who rubbed his forehead, and who presented three slight irregular marks not at all characteristic of variola.

VACCINE DISEASES.

No discovery that has ever been made in the world has contributed so much to the lessening of human suffering and to staying the destruction of human life as that made by Dr. Jenner, by which small-pox can be prevented. No one can at all appreciate the immense blessing which his discovery has conferred upon the world without reading the history of the fearful ravages which were formerly occasioned by small-pox. Now, although the disease occasionally breaks out in our thoroughfares, and perhaps, owing to the carelessness of the people in having themselves fully protected, will always be the case, yet it can always be speedily arrested, so as to have but few victims. The great difficulty is that persons often suppose themselves to be protected when they are not. It is generally supposed that what is called a good *mark* is evidence of protection, but this is not the case; the local disease may run through a regular course, and leave as fine a *mark* as is ever seen, and yet the constitution not have been influenced by it at all, and no protection secured. Then, again, all the constitutional symptoms may supervene, and yet the susceptibility to small-pox not be wholly destroyed, and the person may have the disease in a modified form, known as varioloid, and may communicate the disease in its full form to the unprotected. Full security can only be obtained by repeating the vaccination, at intervals, until what is known to be genuine matter will have no effect.

As I know, from repeated observations, that the most perfect *mark* is no certain evidence of protection, and that persons may have what is called a *bad mark* and yet be fully protected, I shall not trouble the reader with those nice distinctions which we find in the books, and are of so little account in practice, but would insist upon revaccination until genuine vaccine virus will have no effect.

The virus is the most active when taken in the fluid state and immediately inserted. The proper time to

obtain it is when the pustule has pitted in the middle, and the matter is still fluid around the margin.

My mode of procedure is as follows: I take a warm wet cloth and rub the outer side of the left arm about half-way between the shoulder and the elbow, continuing the friction until the skin is slightly reddened, then wipe it dry. I now take some of the fluid matter on the point of a lancet, and spread a little on the skin in three places, about an inch apart; then scratch very slightly with the point of the lancet, first on one place, then on another, and continue this alternately until I obtain a very little blood from each. Now let the part remain naked until it is dry. Some practitioners cover the part with adhesive plaster, but this, by causing exhalation from the surface, will often draw out the virus and prevent its absorption; it is best left without any covering until the pustule is pretty well formed, then it is good practice to cover it with isinglass sticking-plaster, to prevent the pustule being broken by scratching or the rubbing of the clothes.

The natural course of the disease is that for a day or two after the operation the part is a little inflamed, as it would be from the same amount of scratching from any other cause. It then gets well, and for four or five days shows no signs of soreness whatever, so that persons unacquainted with the subject will imagine that the operation has proved to be an entire failure; but about the sixth day some constitutional disturbance should come on, such as attends the forming stage of most fevers, as soreness of the muscles, aching of the bones, restlessness, perhaps headache, lassitude, etc., followed by reaction and febrile excitement, more or less marked, which continues for from one to three days. The points at which the virus was introduced now begin to itch, redden, feel hot, and more or less hard and swollen. Presently a clear, watery vesicle is formed, the surrounding inflammation becomes extended, sometimes involving the whole arm, and requiring some treatment to allay it. The best means for this purpose is to envelop the arm with a cloth saturated with lukewarm water or lead water, and kept wet

by occasionally applying over it another wet cloth, or by pouring the water on the arm while held over a vessel to catch the dripping. At the same time the following mixture may be given internally: Put a heaping teaspoonful of epsom salts and about half as much common soda into a pint of water, and give a wine-glass full every two or three hours. If there is much restlessness add ten grains of Dover's powder to the above mixture, or give a teaspoonful of paregoric or Bateman's drops with each dose of the mixture. Great care should be taken to avoid getting the vesicle broken while in the fluid state, as that will often entirely destroy the protecting power of the vaccination, as it is the absorption of the virus from the pustule, and thus conveying it into the blood, which gives security. Hence the advantage of inserting the virus into several points, for all will not be as likely to become ruptured as would one. Then, absorption from three points will be much more likely to take place than from one only, and the chances of full protection be many times more probable.

There is a very general opinion that the protecting power of the vaccine disease wears out by time, thus making it necessary to revaccinate every few years. But I am certain that this is not the case, but that if a person be once protected he will remain so during life. My own experience is in point. When a small boy I was vaccinated, and it took thoroughly, causing high fever, and extensive inflammation of the arm, and several pustules appeared about an inch from the one immediately at the point of the insertion of the virus. I have had the matter frequently inserted since that time, but no effect has ever followed, and notwithstanding that I have often attended on small-pox patients, and almost recklessly exposed myself to the contagion, yet no effect has ever been experienced, except that about the proper time for the disease to manifest itself after my first exposure to the small-pox contagion—which was about forty years after vaccination—I had the symptoms of the first stage of fever, which lasted about twelve hours, and then subsided

without the use of any means. This, I presume, was a slight varioloid fever, but there was not a sufficient amount of susceptibility to manufacture any eruption. I have seen many other cases of varioloid fever without eruption. For the last twenty years I have rarely passed a season without having small-pox patients, and have taken no care to avoid the contagion. My observation leads me to believe that if the system be once protected by vaccination, that it may be for all future time more implicitly relied on as an immunity from small-pox than having had the small-pox itself. I have seen within the last few years several cases of genuine small-pox—one of which was confluent—in persons who had had the disease before, and who carried the unmistakable marks of it upon their persons. This, I know, has been positively denied by eminent authors, but "seeing is believing," and I could produce a score of witnesses that in Edgefield, a few years since, there occurred several cases of small-pox in persons who had had that disease before. I now urge all persons to be vaccinated, although they may be pockmarked.

It is a great misfortune that as yet no means has been discovered by which the vaccine virus can be kept for any considerable length of time in a condition to be relied on. I have tried all the methods which I have seen recommended, but uniformly failed to preserve it in an active condition for more than a few months. The best means I know of is to inclose a good firm scab in white wax, and keep it where it will not freeze or become over blood heat. In this way I have preserved it for several years in a condition that out of ten insertions one or two would take, and thus give me a start of active matter. A few years since the small-pox broke out where I was practicing, and no recent vaccine virus could be obtained. I took a scab which I knew to be three years old and made about thirty insertions, out of which *one* proved effectual; from this, while in a fluid state, I vaccinated quite a number, not failing in a single instance.

VARICELLA, OR CHICKEN-POX.

This is a contagious eruptive disease, which shows itself usually first upon the breast, shoulders, and back, whence it spreads to the scalp, face, and extremities. The face is less affected relatively than in small-pox. The pocks are sometimes numerous, though usually few, and almost always quite distinct. They first appear as small bright red spots, which quickly become vesicular, and sometimes they seem to break out in that form. The eruption is not unfrequently attended with itching or tingling, which causes the child to scratch and rub the vesicles, and thus to break them, when they often appear as small, formless red splotches. The unbroken vesicles are generally from the eighth to the sixth of an inch in diameter, occasionally somewhat larger, rounded at top, transparent, colorless, or slightly yellow, and very delicate, so that they are easily ruptured. Sometimes they occur in successive crops for two or three days, and consequently appear in different stages of advancement. As they mature, they become a little yellowish, and somewhat opaque, so as, when at their height, on the fourth or fifth day, to have a pearly aspect. At this time they begin to shrink and dry; and, on the sixth day, small brown crusts appear, which gradually harden, and fall off on the ninth or tenth day, leaving the surface slightly discolored, but not depressed. The last crop is sometimes a day or two later than the first in reaching maturity and separating. If much irritated, as by scratching or rubbing, the vesicles sometimes become pustular, and then occasionally leave pits. In certain rare cases of what seems to be varicella, umbilicated vesicles appear mingled with the others, and sometimes leave behind them small, round, deep pits. I have considered such cases as varicella, rather than varioloid, because no small-pox existed to which they could be traced. The *conoidal* and *globular* varieties of Bateman's synopsis are probably examples of varioloid.

Cause.—The only known cause of chicken-pox is a peculiar contagion, unless we admit that it sometimes originates in an epidemic influence. The contagion is not powerful;

and it is doubtful whether the disease can be communicated by inoculation. It is certain that repeated attempts to propagate it in this way have failed; and the cases in which success is asserted to have been met with may very possibly have been varioloid disease, which has often been confounded with chicken-pox. One attack protects the system against a second. The disease sometimes occurs epidemically; but whether independently of contagion is unknown. It is confined almost exclusively to children, though not entirely so. Cases have been observed in persons of middle age.

Varicella was for a long time confounded with variola; but the distinction, when pointed out by Heberden and others, was generally recognized. Dr. John Thomson, of Edinburgh, revived the idea of their identity, considering them as different modifications of the same disease, and succeeded in creating doubts in many. But the following considerations are, I think, conclusive against that opinion. Chicken-pox often occurs in neighborhoods where there is no small-pox; and epidemics of the former disease sometimes occur without a case of the latter. It does not give rise to small-pox in the unprotected, but always to an affection having the same symptoms as the original disease. It occurs with identical characters and with equal facility in the vaccinated and unvaccinated, in those who have had and those who have not had small-pox; nor does it afford the least protection against small-pox or vaccination. The whole course of its symptoms is different from that of variola. The pock is essentially different from the variolous. It is a superficial vesicle, situated between the true skin and epidermis, without any pseudo-membranous product, and without any deep-seated disease of the corium.

Diagnosis.—The only affection with which varicella can be confounded is varioloid, in some of its varieties. Indeed, I have occasionally met with cases, during the prevalence of small-pox, in relation to which it was impossible to decide, with certainty, whether they were variolous or varicellous. But generally, the distinction between modified small-pox and chicken-pox is sufficiently obvious. In the former, the fever is more severe and longer continued.

The eruption is much later in assuming the vesicular character, is often umbilicated, and often more or less pustular. There is, moreover, a greater elevation and hardening of the surface in the pimple, and at the base of the vesicle, which is much firmer than that of varicella.

Treatment.—The disease is never dangerous, and almost always so mild as to be quite insignificant. Its chief importance, in fact, consists in the possibility of occasionally confounding it with varioloid. Little treatment is required. In the severer forms of it, a dose of magnesia or a saline laxative, cooling drinks, and an antiphlogistic regimen may be prescribed; and it is advisable, after the falling of the scabs, to immerse the child in a warm bath. So slight is the affection, that it is scarcely ever worth while to use any precautions against its propagation.

SCARLATINA.

Scarlet fever still continues to be the terror of households, and yearly furnishes its quota of bereaved parents. Sometimes its ravages are fearful. Only last winter there lived in an adjoining county a gentleman and lady whose home was made glad by six lovely children; but the destroyer came in the shape of scarlatina, and in less than ten days they were childless! O! how desolate was that hearth!

This disease has been divided into three grades: *Scarlatina Simplex*, *Scarlatina Anginosa*, and *Scarlatina Maligna*. And though these divisions are rather arbitrary—the different varieties often running into each other and blending in every possible manner—yet, as we often do meet with different cases of this disease presenting true types of each of the grades named, and as these cases must necessarily be treated differently, it is well to preserve these distinctions.

Symptoms.—*Scarlatina Simplex*, or simple scarlet fever.

In this form of the disease there is open reäctionary fever, with an abundant scarlet eruption; skin hot, and pulse full, strong, and rapid. The skin seems to be the principal seat of the disease, the throat not much affected.

The reverse of this is true of *Scarlatina Anginosa:* the

throat here is the point of suffering, often swelling enormously, which, with a croupy exudation, which is frequently considerable, and exceedingly tenacious, often produces absolute suffocation.

In this variety, the eruption is rather later in making its appearance, and is not so regularly diffused. Sometimes no eruption whatever takes place, though the disease might appear in the same family, a part of which had the eruption without the sore-throat.

In *Scarlatina Maligna*, there is profound nervous prostration and great capillary torpor, shown by the purple hue of the surface. The fever is of a low type and very little eruption, and that coming and going as the capillary system varies in activity.

The throat is but little swelled, but is often the seat of foul sloughing ulcers; sometimes the little patient dies in the first stage, assuming many of the symptoms of collapse in Asiatic cholera.

Treatment.—In simple scarlet fever, my treatment is exceedingly simple, and uniformly successful.

In the forming stage, which usually lasts two days, this disease cannot be distinguished from the same stage of other fevers, and I treat it accordingly; rubbing the spine with chloroform liniment, and giving the fever syrup in moderate doses, say a teaspoonful every two hours in a wine-glass of sweet milk. I expect by this treatment to allay the restlessness, and get up such a good state of capillary action, that should the disease threaten to assume the anginose or malignant form, it may be converted into the simple variety. It is the business of the nerves and capillaries to manufacture the eruption, and I presume if they are supported so as to perform their office, the disease will always be open and simple.

When the eruption makes its appearance, if it is very profuse, and the heat of the surface great, I have the surface sponged with tepid water and then greased: a piece of smoked bacon rind is thought to answer best for this greasing—perhaps on account of the empyreumatic oil which it has imbibed—but any mild oil will answer pretty well.

If there is great thirst, I order small and frequently repeated doses of epsom salts, say what you can lift on the end of a teaspoon-handle, given in as much cold water as the child will drink at one time. If this should operate too freely upon the bowels, it must be discontinued, and two or three grains of Dover's powder given. The eruption will begin to fade in four or five days, and if there have been no complications, the child will speedily recover.

In *Scarlatina Anginosa*, besides the treatment already given, prompt attention must be paid to the throat; the inflammation must be assuaged, and the swelling of the glands reduced, or suffocation may take place very speedily. For the first, I use weak pepper tea, sweetened to the taste, (honey should be used if it can be obtained,) with the addition of two grains of ipecac. to a pint of tea: recollect that the tea must be weak; many are in the habit of giving it strong, but this has a tendency to produce dryness of the throat by checking secretion, whereas the weak tea merely excites sufficiently to promote secretion. I usually use the cold infusion, made by putting a few grains of cayenne or a pod of common red pepper in a glass of cold water, removing the pod whenever it has imparted a slight pungency to the water, putting it in another glass of water, to be ready for use by the time the first is used; this drink will be taken kindly, and may be used freely. The throat should be enveloped with flannel, saturated with vinegar which has had as much common salt added to it as it will dissolve. This should be applied as hot as can well be borne, and often renewed; a dry cloth, well oiled or greased, should be applied over the wet one, to prevent cold from evaporation. A teaspoonful of the syrup should be given every two hours in sweet milk, or emulsion of slippery-elm or gum-arabic, to cover its acrimony. As soon as the inflammation is partly subdued, it is best to discontinue the wet cloth, and use some strong stimulating liniment. Either of the following which may be most conveniently obtained will answer: Chloroform liniment; vol. lin.; aqua ammonia and spirits of turpentine, equal parts; or strong vinegar and tincture of capsicum. The bowels

should be kept open with small doses of epsom salts, but no active purgative should be given. Under the best management, one or more of the glands often suppurate; when this is found to be inevitable, it is best to hasten the process by applying a lye poultice. After the abscess is opened, a slippery-elm poultice is best; this should always be covered with a greased cloth, to prevent its adhering.

In *Scarlatina Maligna*, the general treatment must be somewhat varied, and local applications wholly different from those recommended for the last variety. Here we have to contend with deficiency of vital energy, and every thing that is done must have reference to the vital necessity that exists of arousing nervous energy and increasing capillary action. The fever syrup should be given in tablespoonful doses; and if this should disagree with the stomach, carb. of ammonia must be substituted; a good formula is, Emulsion of slippery-elm or of gum-arabic, six ounces; carb. am., one drachm; give a tablespoonful every hour until an effect is produced. As a gargle, use tinc. capsicum, one ounce; mucilage, half a pint, and if the patient swallow it, all the better; or chloroform liniment may be substituted for the capsicum. The throat should be enveloped with flannel saturated with cold water—ice water is preferable. If no decided change take place for the better in a few hours, give the patient freely of brandy and water, and use the *wet sheet*. My habit is to give the brandy until some arterial excitement is gotten up, and then envelop the patient in a wet sheet, cover with one or two blankets, and apply hot bricks to the feet and about the extremities. As soon as reäction has fairly taken place, remove the sheet, and lay the patient between two dry blankets. Recollect we are striving after reäction, and do not want perspiration, and on this account the sheet should be removed as soon as it has accomplished this important office. If the blankets become annoying, change them for sheets. It is very fashionable to cauterize the throat in malignant scarlet fever with nitrate of silver, but I never do it until after ulcers are formed; it then proves very beneficial, by giving a more healthy character to the ulcers.

Now my experience is, that unless the case be one of those terrible ones in which the system at once collapses under the power of the poison, a free use of the fever syrup in the early stage of this disease will convert a case that would have proved to be malignant, into the simple reäctionary form. I have had no case of malignant scarlet fever for many years, in which I was early consulted, and I suppose I should have had many but for the treatment, as they have occurred yearly in this city and vicinity in the practice of others, some of which died in less than twelve hours. On the contrary, a plain case of simple scarlet fever may certainly be converted into the malignant form by improper treatment. A case in point occurred in my own practice many years ago, which made an impression upon my mind never to be effaced, which, as it presents several points of interest, will here be given.

The patient was my only child, a sprightly daughter of about six years.

The undisputed doctrine then was to stimulate in the eruptive stage, in order to obtain a plentiful crop. She accordingly was covered up, and encouraged to drink freely of warm teas. Under this regimen there was soon rather a surplus crop of eruption, and the heat and restlessness were so great that I was forced to allay them by covering her lightly, and rubbing her all over with wheat flour. Having obtained a period of comparative quiet, and considering the case doing very well, I withdrew my attention for about two hours. On again examining her, I found that a change had come over the case: her breathing was hurried and anxious, considerable stupor, the eruption rather purple; and on looking into her mouth, a sight was presented calculated to shock parental sensibility to the utmost. The whole lining membrane of the mouth was of a mahogany color, deepening as it approached the fauces, where it had become entirely black, showing that decomposition had already commenced. For a moment I was past thinking; but rallying, I began to cast about for some means which might give a chance. As I had never seen a parallel case recover, I had no satisfactory experience to

fall back upon; but the object to be effected was very evident—general reäction must be established, and the gangrene arrested, or death must ensue in a few hours. After administering some unadulterated brandy, and perceiving that sensibility of the glottis and fauces was destroyed, I ventured to put a few drops of undiluted aqua ammonia on the back part of her tongue, which was swallowed with the ease of water; I repeated it every few minutes, each time increasing the dose, until a full teaspoonful was swallowed at once—taking the precaution to give freely of cold water immediately preceding each dose, so as to prevent its irritating the stomach, at the same time that the full stimulating effect might be received by the dying tissues. In half an hour I perceived a salutary change: general arterial action was improved, capillary action better, manifested by a more florid color of the eruption; and, on examining her mouth and throat, I discovered that the mahogany color had faded considerably, so as to show a well-defined outline to the area of the mortification. I now discontinued the ammonia, and substituted strong pepper tea; this was discontinued in an hour or two, as the returned sensibility of the mouth and tongue caused its pungency to annoy her, and also because reäction was now quite satisfactory. A drink of the juice of green sage, diluted with water and sweetened with honey, was now given.

On the next day I had the satisfaction to see the blackened covering of the fauces cast off, exposing a very healthy but very irritable mucous membrane. Recovery was now rapid and without accident.

The points of interest in this case are: first, that it certainly was *Scarlatina Simplex* at the beginning, but was converted into *Scarlatina Maligna* by improper stimulation, producing excessive eruption, and this causing so much nervous excitement as to produce nervous and capillary prostration. Second, that by powerful stimulation the malignant form was made to yield to the original type, it terminating in the ordinary happy manner of *Scarlatina Simplex*. The third is, that it affords encouragement to persevere under difficulties, and not give up a case because

heretofore we have been unsuccessful. The fourth is, that it illustrates the fact that desperate conditions often warrant the use of what, under ordinary circumstances, would be desperate remedies. At present I would not in a like case depend so exclusively upon ammonia, and should not then, but for the fact that there was nothing else suitable at hand. I had often used the oil of sassafras alone, and in combination with ammonia, for arresting external gangrene, but there was then none in reach. At present I would rely upon the chloroform liniment. I will take the present occasion, as perhaps as suitable as any other that will occur, for saying something more upon the danger of excessive external stimulation producing fatal prostration. We meet with examples of it in all the eruptive diseases; from excessive blistering of young children; from extensive though very slight burns; and among the children of the poor or careless inhabitants of our hot and well-supplied mosquito city, I have frequently been called to visit babes who had been suffered to lie naked in order to keep cool, who presented very alarming symptoms of prostration of vital energy, and after careful examination and inquiry I could find no sufficient cause, except in the fact that the surface was densely covered with mosquito bites. An anodyne internally, with a little brandy as a soothing wash for the surface, have always proved sufficient to relieve such cases. In order to impress this subject upon the mind of my readers, I will give a short history of a fatal case that I witnessed some years ago.

A gentleman, a mile or two from the village in which I then lived, called on me one evening, saying that there was a case at his house that he did not understand, and came to state it, that I might decide whether any thing was wrong. He informed that on the previous day a little negro girl had her calico slip to take fire; but as he was near at hand, he succeeded in tearing it off before she was seriously burned; that after the first half hour she ceased to make any complaint of the burn, but, what was singular, had gone to sleep and could not be aroused. I told him that his negro would certainly die, which surprised him exceed-

ingly; he insisted, however, that I should see her, and I did so.

I found that the burning garment had slightly scorched the whole surface, but only in a few small places sufficiently to excite vesication; her pulse was scarcely perceptible, and the whole surface cool; respiration very slow and languid; coma complete. I made some vigorous efforts to stimulate, but to no purpose—the system would not respond, and in two hours she died. Some persons may imagine that my teaching and practice upon the subject of stimulating in the eruptive stage of scarlet fever are contradictory—that I prescribe the fever syrup, which is a powerful stimulant. But I would have such to understand that the comp. syr. of val. is not a *general* stimulant, especially not an *arterial* stimulant. Its effects are to quiet the nervous system and excite the capillaries, thereby preventing that kind of morbid excitement which produces excessive eruption. It is true I have said that it is the business of the nerves and capillaries to manufacture the eruption; but if they are preserved in sound condition, they will do this as it should be done, neither half doing nor overdoing their task, and it is the natural effect of this medicine to preserve or put them in proper working order. The operation of the fever syrup in high febrile and inflammatory diseases is graphically and truthfully set forth in a communication from a very intelligent correspondent. After stating its beneficial effects in the treatment of a number of active inflammatory diseases, he states:

"The only inflammation in which your fever syrup is contra-indicated is gastritis; here it acts as a direct irritant; but by the time it reaches the bowels, it is so modified as not to act injuriously; on the contrary, I have derived great advantage from it in chronic dysentery and inflammation of the bowels; and when it reaches the capillaries, it there sets every thing right again; the pain, irritation, and heat subside, the engorgement disappears, and all move on naturally and pleasantly again."

Now, if it would act as above in active inflammation, is it

probable that it would increase febrile excitement? The very opposite is its legitimate effect.

Sequœla of Scarlatina.—The diseases which sometimes follow scarlet fever are often more formidable than the disease itself, especially as they are most apt to follow the mildest cases.

This has been supposed to be owing to the poison not having been properly eliminated from the system, which I think is a rather groundless conjecture. A much more plausible reason is this: the disturbance in a very mild case is not sufficient to produce reäction sufficient to restore activity to the capillaries; and though capillary debility seems to be slight, yet it remains, and as the patient is not sick enough to be kept in-doors, some exposure renders the capillary debility more intense, and it runs into active inflammation, or the debility becomes profound, and produces such a state of relaxation as will admit the watery part of the blood to exude into the cellular structure, or upon the serous surfaces, causing general or partial dropsy. With this view of the subject, the means of relief naturally suggest themselves. Give the fever syrup freely in watermelon seed tea, and promote the secretion of the bowels and kidneys with salts and cream of tartar. Under this treatment the dropsy will speedily disappear.

D. C. A. Moses, M.D., Eldridge, Ala., writes:

"You say nothing in your work of using your fever syrup in dropsy. Now, if you never have used it in such cases, give it a trial—it will not disappoint you. The cases that I have used it in are such as are recognized by the profession generally as incurable, cases of long standing in the old and feeble, and which depend upon general atony of the whole system."

The dropsy following scarlatina, we have seen, depends essentially upon debility; therefore the above is in point.

As to the inflammations, glandular swellings, etc., which sometimes follow *scarlatina*, if they be treated on the general principles laid down in this work, or according to enlightened common sense, there will be but little difficulty in managing them; though patience may become a virtue before a com-

plete cure is obtained. After the prominent disease has been pretty well managed, chalybeates are often of great service.

The treatment in scarlet fever by Wood, Watson, and other standard authors, is substantially the same, and is as follows:

In the simple variety, very little treatment is thought necessary; keeping within doors, simple diet, and opening the bowels by cooling laxatives, being sufficient.

In the anginose variety, emetics, calomel, saline purgatives, sponging the surface with cold water when hot, bleeding if the inflammatory action runs high, (cupping or leeching is preferred,) cooling drinks, etc.; and if the energies of the system seem to fail, stimulants, as wine, brandy, quinine, camphor, carb. ammonia, etc., are to be resorted to.

If the throat is much swelled, leeching, poultices containing pepper, turpentine, etc., are directed; also gargles of pepper tea, or astringents, such as alum, sul. zinc, etc.

In the malignant variety, known as *putrid sore-throat*, stimulants, tonics, and opiates are relied on. I have nothing to offer against the above treatment, but I have shown you "a more excellent way."

RUBEOLA—MEASLES.

Much that has been said under the head of scarlatina is equally applicable to measles, and need not be repeated. Its diagnostic symptoms are cough, suffusion of the eyes, irritation of the mucous membrane of the nose, fauces, and air-passages, causing sneezing, running at the nose, cough, etc. These are attended with more decided symptoms of fever than ordinarily accompany common catarrh; but nothing positive can be known until the eruption appears, which will be about the fourth day of the fever.

The eruption appears in form of small red points, mostly grouped into circles or semicircles, of about a line in diameter; these gradually coalesce, forming strawberry-colored blotches, slightly elevated above the surrounding surface; they mostly appear first on the face, extending to the breast,

arms, body, and lower extremities, in order; they also invade the mouth, fauces, and, at times, the whole respiratory tubes. The blotches are usually entirely distinct, having more or less surface between them of a natural color, but sometimes they become confluent on the face, breast, and upper part of the arms. After the eruption fully appears, it relieves, in a great measure, the sickness, which at first is very annoying, but does not give much relief to the pulmonary disturbance, and the fever has no tendency now to abate, as in small-pox. In five or six days, both the fever and eruption begin to decline; the tongue, which had been intensely red, begins to assume a more natural appearance, the appetite returns, and the surface casts off its epithelium in the form of scales.

Diarrhœa is a frequent attendant on this disease, and, if not very severe, proves salutary.

Treatment.—In most cases of measles, very little should be done; bland drinks, unstimulating teas, such as balm, wild sage, etc., with two or three teaspoonfuls of the fever syrup in the course of the day, are all that is required. Nothing should be given to "strike out the measles;" no efforts will succeed until the proper time arrives, and then you cannot keep them back if you try. But injudicious efforts to bring out the eruption, often do much harm, by increasing the crop to a dangerous extent.

If the fever be very high, and there be great heat of the surface, tepid sponging may be resorted to, and two or three grains of ipecac. added to a glass of cold water or mild tea, and the patient directed to take a swallow at short intervals. If the patient, on the contrary, is rather cool and restless, a few pretty full doses of the fever syrup, with a few grains of Dover's powder, will bring them to the right point. After the eruption is out, unless there are complications, I do nothing except to give the fever syrup in small doses; the best manner of exhibition is to add a teaspoonful to a glass of cold water, and allow them to drink that quantity every two or three hours. The syrup undoubtedly moderates the fever, and prevents all accidents from damp or cold, which are so often met with, and which are often

serious; given in the above form, it enables the patient to drink a sufficient amount of water to supply the wants of the system without offence to the stomach, or injury any way. If the cough is very troublesome, and pulmonary distress considerable, add two grains of ipecac. and five of Dover's powder to a glass of mucilage, and give a tablespoonful every half hour.

Occasionally the brain becomes deeply involved in this disease, and requires very prompt attention. In slight cases, a cold wet cloth to the forehead will be sufficient; but I had a case, a few years since, which required the whole head to be enveloped with pounded ice, which had to be continually applied for nearly forty-eight hours; the disease then yielded, leaving no unpleasant results.

To allay excessive itching and burning of the surface, wash and grease as directed for scarlatina. Great care should be taken, during convalescence, to avoid cold and exposure. If any unpleasant sequœla follow, they must be treated upon general principles.

Recapitulation:—Time after the contagion is received until the disease begins to manifest itself, about fourteen days; forming stage, four days; eruptive stage, ordinarily, seven days; under the use of the fever syrup, from three to four days.

Can the contagion be prevented from taking effect? I think it can.

For nearly thirty years I have been in the habit of using a means for this purpose which, so far as ever came to my knowledge, has never failed; this is the odor of turpentine. The manner in which I use it is to saturate a woollen cord, or, what is better, a slip of buckskin, and apply it around the neck, so as to fall pretty low down, resting upon the under garment and being hidden by the outer; it must not touch the skin, or it will irritate the sensitive surface of a child excessively.

The first time I saw this remedy tried was on a crowded steamboat on the Ohio river. A case of measles occurred, and there were many unprotected persons aboard. I remained with the most of these long enough to know that

the disease was not contracted. Since then I have always recommended mothers to use this precaution when taking their children to camp-meetings and other public assemblages, when the disease was known to be in the vicinity; and, so far as negative evidence can prove any thing, trials enough have been made to settle the question as to its power.

ERYSIPELATOUS FEVER—ERYSIPELAS.

Erysipelas is often a local disease, arising from local causes, as wounds, etc.; but, as it also not unfrequently appears as a distinct idiopathic fever, and is sometimes even epidemic, it may properly be classed with particular fevers of the eruptive kind. This disease is usually ushered in with the common symptoms of the first stage of fever, viz.: languor, general uneasiness, aching or soreness in the limbs and joints, chilliness, or rigors, alternating with flushes of heat, succeeded by a frequent pulse, hot skin, a furred tongue, anorexia, thirst, sometimes nausea and vomiting, headache, restlessness, muscular weakness, and not unfrequently soreness of throat, or swelling of the lymphatic glands in the vicinity of the part which is to be the seat of the cutaneous inflammation, as of the neck in erysipelas of the face, and of the axilla or groin in that of the extremities.

On the second or third day of the fever, though sometimes earlier and sometimes later, and occasionally as the first observable phenomenon, there may be seen, upon some part of the surface, a small reddish spot, usually somewhat elevated, painful, and tender to the touch. This may occur upon any portion of the body, but is much more frequent upon the face than elsewhere, especially upon the side of the nose, the cheek, or the rim of the ear. The inflamed spot gradually spreads, usually in all directions, though often more rapidly in one than in another, exhibiting almost always as it advances an irregular, abrupt, and somewhat elevated margin, which forms a striking boundary between the sound and the diseased skin. In some instances the border is less definite, though scarcely ever gradually shaded

off like ordinary inflammation, so that it cannot be traced. The diseased surface is red, often shining, hot to the hand, and generally harder than the sound skin. The redness disappears under the pressure of the finger, but quickly returns when the pressure is removed. The distance to which the inflammation extends differs greatly. In some instances it advances slowly, and is confined within narrow limits; in others it spreads quickly over large portions of the surface, and, in certain comparatively rare cases, does not cease to make progress until it has invaded successively every part of the skin. Almost always its progress is continuous; but now and then instances occur in which it attacks in succession separate and even distant parts of the body.

In the face, it sometimes confines itself within the limits of the features, but generally has a tendency to spread upward to the scalp, and not unfrequently extends over the whole head, and even downward to the neck, though rarely so far as the chest.

There is usually considerable swelling, the skin being thickened and hardened, and the subcutaneous cellular tissue in general more or less distended, especially in parts of loose texture, as in the eyelids and about the eyes, in the scrotum and prepuce, and in the vulva, which parts are apt to become strikingly edematous.

The face is often so much swollen that every characteristic feature is obliterated. The eyes are closed, the lips, nose, cheeks, and ears greatly enlarged, the nostrils so much obstructed that the patient cannot breathe through them, the mouth so stiff that he speaks with difficulty, and the external orifice of the ear sometimes so much narrowed as to interfere with hearing. When the disease extends over the scalp, this is usually much swollen and puffy, and the whole head sometimes enormously enlarged.

A burning, tensive, pricking, and smarting pain is usually experienced, and the parts are so tender that pressure produces much uneasiness. When the whole scalp is affected, it is difficult for the patient to find a comfortable position for the head. The pain, however, often remits.

Sometimes the inflammation gradually rises for three or

four days, then gradually subsides, without apparent effusion of any kind, and terminates in desquamation; [scaling off.] But more frequently, about the third or fourth day, the cuticle is elevated by a serous liquid, which sometimes appears in the form of minute vesicles, sometimes blisters or blebs, like the bullæ of pemphigus, from a quarter of an inch to an inch or more in diameter, which occasionally run together, so as to produce an extensive blistered surface. The surface is often moistened by exudation from these vesicles, or their rupture. On the fifth or sixth day they begin to dry, and on the seventh or eighth form small crusts or scales, which usually separate by the tenth, leaving the skin covered with a new cuticle. When the hands or feet have been affected, the cuticle sometimes separates entire, so as to form a mould of these parts. The redness and swelling subside at the same time, and are nearly or quite gone when the crusts are fully formed. The whole duration of the inflammation is thus, in favorable cases, about a week, though sometimes shorter, especially in the young and healthy, and sometimes, from various causes, considerably protracted. Even after desquamation, it is sometimes long before the skin acquires its natural appearance and flexibility.

The course of the disease often varies more or less from that above described. Thus, while the part first affected is going through the regular changes, the inflammation may have advanced to another part, which goes through its own periods of advance and decline; and so on with different parts successively, so that the disease may be prolonged for a month or more.

After the removal of the cuticle from the vesicated parts, the surface sometimes continues to exude an acrid lymph for several days, and may even pass into a state of suppuration or ulceration, which greatly retards the cure.

In some cases the inflammation in the subcutaneous tissue ends in suppuration, and even in gangrene of the cellular tissue. In the former case, pus of a healthy appearance escapes through ulcerated openings in the skin; in the latter, grayish strings of the dead membrane, like wet tow, come

away, along with a thin, ichorous, and fetid purulent discharge. The face sometimes presents the disease at once in its different forms: portions undergoing resolution without vesication, others exhibiting vesicles on the surface, and others, as the parts about the eye, discharging pus and disorganized cellular tissue. The tissue beneath the scalp not unfrequently, in bad cases, passes into this gangrenous state, though the skin itself generally remains sound, except when ulcerated to permit the escape of the dead matter. But this condition of the disease is still more frequent upon the limbs and trunk. In these parts, the pus not being duly confined, as in phlegmonous inflammation, by the exudation of coagulable lymph, often travels great distances, destroying the subcutaneous cellular and adipose tissue, dissecting the muscles, and involving life in great danger. Even where recovery takes place in such cases, deformity may ensue from the resulting contraction, and difficulty of movement from the adhesions which may form among the muscles, or between them and the skin. Sometimes gangrene of the skin itself is added to the various mischief. This happens more especially in the extremities. It is obvious that in all these cases, when not fatal, recovery must be considerably postponed.

During the continuance of the cutaneous inflammation, the fever also continues, and sometimes in a greatly aggravated form. In vigorous constitutions, with no asthenic tendency in the disease, the pulse remains full and tense, without being very frequent; and, unless the inflammation invades the scalp, though there may be a little occasional delirium, the fever has generally an open inflammatory character, and offers little to cause alarm. But when the scalp is involved, symptoms of cerebral disorder are very often evinced, such as headache, tinnitus aurium, restlessness, and decided delirium, or, what is perhaps more frequent, and constitutes one of the most striking features of these cases, a tendency to drowsiness, stupor, and even coma.

The most alarming form in which erysipelas has ever appeared is that known as *black tongue*. Some years since it prevailed in many parts of our country with great fatality, and we still occasionally hear of its existence, but not in a form to produce such consternation as it did in the years of 1842 and 1843. In 1845 it prevailed pretty extensively within the bounds of my practice. My cases all recovered under apparently very simple treatment. I had the mouth and throat frequently washed with the following mixture: Decoction of oak bark, one pint; apple vinegar, one gill; carbonate of ammonia, one drachm (about a teaspoonful;) oil of sassafras, thirty or forty drops. A tablespoonful of the above mixture was also given internally every two or three hours. I also gave two or three grains of sul. quinine every two or three hours, and had their bowels moved every day by castor oil.

Erysipelas occurs at all seasons, but most frequently, as is asserted, in the spring and autumn. All ages are liable to it. Women are said to be more frequently affected than men. One attack offers no security against a second.

The inflammation in erysipelas is of a peculiar nature, and derives that peculiarity from some not understood state of system, or from some equally unknown peculiarity of the cause. That it differs from ordinary inflammation is proved by its disposition to spread, the distinct boundary it preserves in spreading, the severe burning which attends it, its tendency to gangrene, and the indisposition it evinces to the secretion of coagulable lymph, which is so characteristic a product of phlegmonous inflammation. In the disease now under consideration, it is obvious that the fever, though it may be aggravated by the local affection, is wholly independent of it in its origin; for it often precedes the inflammation by one, two, or three days. It is highly probable that, in cases of traumatic erysipelas—that arising from local causes—there may be the same constitutional state, but in a degree insufficient to excite fever without the aid of the local disease.

It may be difficult or impossible to distinguish the initial

fever of erysipelas, before the appearance of the cutaneous affection, from many other febrile diseases; but Frank has pointed out a symptom which he considers diagnostic; and Chomel and Blache in relation to it make the following observation: "Whenever a patient has exhibited, for twenty-four or forty-eight hours, an intense febrile movement, attended with *pain, swelling, and tenderness of the lymphatic glands of the neck*, we have not hesitated to announce the approaching development of erysipelas, and in no case has the diagnosis been invalidated by the result."

As the disease commonly appears in good constitutions, it very generally ends favorably. In erysipelas of the face, the chief danger arises from the brain becoming involved, and this is most likely to happen when the inflammation invades the scalp, though this last event often occurs without serious consequences. A sudden disappearance of the external disease, with the occurrence of symptoms indicating internal irritation or inflammation, is unfavorable. Such a metastasis is most likely to happen in the wandering variety. The phlegmonous form is, in other respects, more dangerous than the superficial. The gangrenous variety is very dangerous. The very old, the intemperate, and those already nearly worn out by previous disease, are apt to die. This is peculiarly the case in dropsy, in which a fatal erysipelas often attacks the swollen limbs, especially after punctures; but death, in these instances, is only a little hastened. The disease is often fatal when it occurs near the close of febrile diseases; though recoveries also, under such circumstances, often take place. The prognosis is always more unfavorable in hospital than in private practice. In new-born children the disease is exceedingly fatal; as it also often is when it occurs epidemically, and whenever it puts on a malignant form. Coma and continued delirium are always unfavorable symptoms.

I hope the reader will pardon me for being rather tedious in the description of erysipelas; it is very important that he should be able to recognize the disease in its various forms, as the earlier the proper means are used for its suppression, the easier it is managed, and the less suffering will

have to be endured. I have known several instances in which this disease started from an old sore, or a recent slight injury, in which one night's delay came near costing the patient's life, it having been mistaken for common inflammation. I will now give the *treatment*, and will be as short as possible, so as to give full, plain directions for managing the disease in all its varieties.

As far as the *fever* is concerned, that must be treated upon general principles. The plan laid down, and so fully dwelt upon in the preceding pages, is applicable to all fevers —it strikes at once at the root of the matter; for by removing the *condition* in which fever consists, the *febrile movement* will at once be arrested, and all the phenomena, or symptoms arising from it, will gradually subside. Now I have said, and I think clearly proven, that fever essentially consists in *nervous disturbance* and *capillary inaction;* and that when these are present there is fever, and when either of them is absent there is, and can be, no fever; and when it is recollected that the febrile movement is substantially the same, let the cause be what it may, it is not surprising that the same means are equally applicable to all its varieties and grades, and only require the doses to be varied so as to produce the desired effect, and such other means used as will aid the principal remedies and meet occasional complications, and remove local irritations which may tend to keep up or feed the fever. All this has been very plainly dwelt on, and I think fully explained, in the first part of this work; and I refer to the subject now as an apology for again bringing forward the same means which have so often been recommended in other varieties of fever. A general complaint urged against family medical works has been, that they recommend such a variety of medicines, many of which are so difficult to obtain, that it becomes impossible to pursue the directions—in fact, it is less trouble and less expense to employ a physician, than to procure, and keep on hand, the necessary means to follow out the author's directions. The complaint, I fear, will be of an opposite kind with regard to this work; for as I believe that the principles or laws which govern diseased

action are few, however various and complicated the symptoms may be, I also believe that a few remedies, properly chosen and properly administered, and at the right time, are capable of controlling diseased action in all its forms; and thus the practice of medicine is very much simplified and made plain; so that any person of good common sense can very successfully contend with disease in its various manifestations, or even prescribe with judgment and good effect in cases which had never been seen before. I have never used many remedies in my own practice, and I will not, in order to appear learned, burden my readers with more than I would use myself.

While attending in epidemic dysentery some years ago, I frequently had half a dozen patients in the same house; on one occasion the nurse observed that it was no trouble to follow my directions—that my remedies were so few and so easily given, that she had no difficulty in attending to all the cases; whereas, the physicians who had preceded me, ordered so many things for each patient, and each differing from the others, that she became bewildered and could not carry out the directions; and, consequently, was blamed for the want of success which followed. It is true, there should, besides the means most relied on, be other means suggested that may be resorted to, should the best not be at hand; or any peculiarity in the case, or susceptibility of the patient, render the use of the others improper. This I have attended to; always selecting such as will be most likely to be at hand, or easily obtained. Another advantage that arises from prescribing the same remedy in preference to a new one, whenever it will answer as well, is, that we become more thoroughly familiar with its mode of action, and the effects it should produce; so that we are prepared at once, should a change come over the case, to decide whether it is the effect of the medicine or of some other cause. But lest I weary the reader, I will proceed to give the treatment of erysipelas. The fever, as before remarked, should be treated like any other fever of the same grade and in the same stage; in fact, until the eruption appears, no one can say whether the fever is erysipe-

latous or not, it being attended with the very same symptoms which precede small-pox, scarlet fever, measles, or ordinary bilious or typhoid fever; so that if we had to wait until we were certain what the proper *name* of the fever should be, we would always lose much valuable time, and often the only time in which the disease can be so managed as to abort or break it up at once, and prevent much suffering and risk of life. If, therefore, you have a case of sickness presenting the common symptoms of the first stage of fever, do not wait to name it, but proceed at once to treat it. Rub the spine with the chloroform liniment to ease the pains or aches, or other distress which the patient may be suffering; for even should there be no uneasiness of the back, yet we know that the nerves originate there, which are distributed over the body, and which are complaining at the place where they terminate; and that if they are quieted at their origin, they will also become quiet, and cease to complain, at their termination. But if you have no chloroform liniment at hand, use the next best remedy which you do have, viz., camphor and laudanum, or camphor alone; or apply a flannel, wrung out of hot mustard water, all along the back-bone, or rub the back with vinegar or spirits of turpentine, and then apply the flannel wrung out of simple hot water. At the same time, let the feet be bathed in very warm water, as warm as can be borne, with mustard, or salt, or ashes in it.

These means will give present relief from suffering, and prepare the system to be more easily brought under the influence of internal remedies. At the same time that you are doing these things, you should give the *fever syrup* in such doses as will agree with the patient's age, or susceptibility; children, and delicate nervous females, will require less than others, unless the disease has rendered the system partly insensible to impressions; in such cases they will require as much as a strong man. A child six months old will bear a teaspoonful very well, provided it is given in one or two tablespoonfuls of sweet milk; it should always be given in milk to children, and to older persons too, unless the milk is repulsive; then it should be given in

slippery-elm water, or it may be taken in plain water, but it will then be more pungent; but to some persons this pungency is rather agreeable. The ordinary dose for a grown person is from a half to a full tablespoonful, and should be repeated every two or three hours. There is no danger in an overdose of this medicine; the only disadvantage will be a little too much temporary excitement and a waste of medicine. But if the syrup is given without being diluted with something to lessen its pungency, it sometimes impresses the nerves of the stomach so powerfully as to cause very unpleasant symptoms in nervous or excitable persons, and though no bad effects will follow, yet the patient will afterwards dread to take the medicine; so that I would impress it upon my readers to always give it in milk, or some vehicle that will lessen its pungency. If you have not got the syrup, give a third of a teacupful of boneset or vervine tea, with a teaspoonful of Bateman's drops or paregoric to each dose, and repeat it every two hours, until there is a pleasant excitement on the surface, and the patient feels relieved; then give a tablespoonful of castor oil or epsom salts, and let the patient have as much mild tea, such as wild sage, balm, or queen of the meadow, as may be desired. If these teas should not satisfy the thirst, cold water, or a weak *beverage*, made by adding a little vinegar to the water and sweetening, if desired; or lemonade, or cream of tartar, may be allowed as freely as the patient desires.

I have now run over my general plan of treating the first stage of fever, though it had been given before, so as to save the reader the trouble of hunting it up, and also to impress the subject upon his mind, should he even have recently read what I have before said. Now the only difference that need be made in treating the mildest and the gravest cases of fever is, that the latter will require larger doses of the syrup, or other medicines given in its stead; and that the external means recommended should be more fully carried out than would be absolutely necessary in milder attacks. Even the most congestive form in which I have ever seen this fever appear, has yielded to this

treatment; and I should expect to see it succeed, should I meet with a case of that form known as *black tongue;* for, as has already been shown from the symptoms of this variety, it consists essentially in the same general train of morbid action that characterizes other forms of the disease, and will of course be amenable to the influence of the same curative means which control them, only requiring that the remedies be given in doses proportionate to the virulence of the disease. Much may be accomplished by external remedies in the management of erysipelas; in fact, when the disease has a local origin, and before the constitution has become so influenced as to produce fever, it may often be successfully controlled by external means alone.

The oil of sassafras seems to exert some peculiar power over this form of inflammation, often arresting its progress at once; but I seldom use it alone, as it sometimes fails, or is slow in its action. The chloroform liniment I think may be considered a specific for this disease, having never failed in my hands, or in the hands of others, so far as I have been informed, in putting an immediate stop to the extension of the inflammation, or of giving prompt relief to the burning torment arising from the part already affected. But its application is attended with momentary acute suffering, and therefore must be applied to a small part at a time; its application to a large surface might cause too much nervous disturbance.

A few years ago I had a severe case of erysipelas of the face under treatment. The patient was a lady of excitable temperament, and the burning effect of the liniment, even to a small surface, she thought too much to endure, and refused to submit to a further application. Other means were tried; the surface was cauterized with nitrate of silver, (a popular remedy,) but the disease quickly leaped over the black line which it made, nor did it materially abate the burning in the surface to which it was applied; cooling applications were resorted to, but only gave temporary and partial relief; finally, the disease extended to the ears, and the burning in the rims and pendent parts was so intense as to cause her to tremble as from a fit of ague, and

weep like an infant. I now persuaded her to apply the liniment herself to a very small part that was burning the fiercest, and note the effect. She accordingly, with a camel's hair pencil, touched the tip of one of her ears, and found that, after smarting only for a moment, it left the part perfectly clear of suffering. This encouraged her to extend its application, so that in the course of a few hours she had gone over the whole inflamed surface, which involved the whole face and part of the head and neck, putting her at entire ease so far as the external disease was concerned. The fever syrup was given regularly; and as there were strong symptoms of chill in the forenoon, with high fever in the afternoon, ten grains of quinine, and five of Dover powder, made into four pills, and one given every four hours, beginning as soon as the fever abated a little, broke up this periodicity in the disease, and materially assisted the syrup in breaking up the febrile movement: she was quite clear of disease on the fourth day after the first accession of the fever.

But suppose that the liniment is not at hand, or will not be submitted to: a pretty good substitute may be found in the application of common good whiskey; for, however much this may aggravate an inflammation taken internally, it is certainly one of the most cooling and soothing external remedies we possess. The best mode of applying the whiskey is to saturate a soft cloth and cover the inflamed surface with it; this cloth should be suffered to remain, and kept wet by pouring the spirits on it, or, what is a better way, by often applying another cloth over it which has been saturated with the whiskey. But whatever local remedy is used, nothing more can be expected from it than a relief of the surface already affected, for the disease, though beginning at a point on the surface, has done so because the system was in a certain condition which prepared this local part to take on this form of morbid action, and as long as this condition of the system continues, new points of attack will probably be made; and it is only by removing this condition and the erysipelatous fever, which is its result, that the disease can be effectually arrested;

and the *fever syrup*, and other means already prescribed, will very shortly do this if persevered in for a few days. But it is very difficult to persuade people, and some doctors, that a *fever* can be broken up without some evacuations; they have been in the habit of seeing fevers attacked with vomits, and purges, and sweats, and bleedings, etc., and the idea sticks fast that there must be something in the system that has to be brought out by some or all of these means before a fever can be made to give way. But if fever is a mere condition of the system, when we change that condition, of course the fever will also disappear; and that it is so has been already sufficiently proved, and made doubly certain by the almost uniform success which has followed the treatment which has been suggested by this view of its nature. When erysipelas is deep-seated, the liniment will not subdue it as promptly as when on the surface, but still it is the best application I know of; and where the disease is on a part that will admit of being bandaged, these two means, used in conjunction, will rarely fail to give speedy relief and prevent suppuration, which is always a troublesome circumstance; when it does occur, no better application can be made than the bandage, kept saturated with whiskey. But as soon as the fever is broken up, and a good capillary action permanently established by a continued use of the syrup, suppuration will be arrested, and coagulable matter secreted instead of pus, by which the cavities will be quickly obliterated.

I will close this long article after detailing one case of a most malignant character, which was successfully treated upon the above plan. The subject was a degraded female, who had used intoxicating liquors to great excess for many months. When I saw her, the greater part of one leg, and a part of the other, were involved in the disease, and vital action was so low that an immediate death of the structures involved followed the extension of the disease, the surface over which it had spread being absolutely black and perfectly insensible; her pulse was exceedingly feeble and threaded, and extremities quite cold; and all this had taken place in a few hours. I drove to my office to obtain the

necessary remedies, and a severe shower of rain prevented my return for about two hours. By this time the disease had made its appearance on the abdomen; an extent of surface larger than a common saucer, just below the navel, was of a deep mahogany color. I looked upon the case as desperate, but concluded to make an effort. I gave her the fever syrup in tablespoonful doses, every hour, with ten grains of carb. ammonia in each dose; cloths saturated with chloroform liniment were applied over the affected surface, and extending beyond its boundary. I called next morning, and I confess was much surprised to find her not "only alive, but doing well;" the disease had not extended; pulse full and natural, and extremities warm; nothing more was done, except that the syrup was continued at longer intervals, and cloths over the affected surface kept wet with whiskey. In a few days the dead black scarf-skin peeled off entire, leaving a sound surface beneath.

There is a variety of this disease known among the people by the name of shingles, which appears on the body in irregular patches; it requires no peculiarity of treatment, but yields very readily to the remedies which have been described. Still another variety, which usually assumes an irregular circular form, is known as the *rose;* it also yields to the same treatment.

The external actively inflammatory variety, which is the most common form in which this disease is seen in this country, is known as *St. Anthony's Fire;* and the epidemic form which it assumed some years since, in which capillary action is so low as to allow of an almost total stagnation of blood in them, giving a black or dark mahogany color, has received the name of *black tongue.* The deep-seated variety, which is not so readily recognized by the eye, is usually known as phlegmonous erysipelas.

I had thought of giving the treatment recommended by other writers on this disease, but, as I think it would only confuse the reader, I omit it.

DIPHTHERIA.

When this disease presented itself in the United States in an epidemic form, some years since, it was thought to be a new disease; but the wise man's declaration that "there is nothing new under the sun" applies in the present case, for medical records show that from the earliest period of the world's history down to the present time this disease has occasionally paid its unwelcome visits, and often made the nations tremble with fear. We owe much to Dr. J. L. Madden, of Nashville, for an able and exhaustive paper, which he read before the State Medical Society last April, upon this subject, and by his permission it will be drawn upon rather freely in the preparation of this chapter. Now, although it is certain that diphtheria has occasionally prevailed as an epidemic, in different countries and at various times, ever since "sin entered into the world," yet it was never known by this name until within comparatively a recent period, but was recognized by different names at different times and in different countries. We will not tax the reader with its history, but proceed at once to consider its nature, and designate the best mode of treating it at present known.

As *diphtheria* often prevails as an epidemic, it might be expected to be a disease of low vital action; and observation proves this to be eminently true, it in some instances overwhelming the system so entirely that the patient dies in the first stage, without the occurrence of any of the distinctive features of the disease, as we see occasionally the case in cholera, scarlatina, and other malignant epidemical diseases. But usually, after a period of a day or two of indisposition common to all febrile diseases, it manifests itself by symptoms much resembling those of the first stage of scarlet fever, such as huskiness of the voice, some soreness and swelling of the throat and of the glands about the throat and neck, some increased discharge from the throat and nostrils, as in common colds, etc. On examination there will now be seen increased redness and thickening of the mucous membrane of the mouth and

fauces, and the uvule, or pendulous palate, and the tonsils are enlarged and much congested, giving them rather a livid or mahogany hue. The tongue is furred, and the whole inside of the mouth looks slimy. There is now some fever, but the heat is not apt to be great; the skin may be dry and harsh, but is most likely to be irregularly moist and dry, and feels doughy. In this stage it may easily be mistaken for scarlet fever; in fact, we will have to be governed a good deal by the prevalence of either disease at the time in making a diagnosis. But a mistake will lead to no injurious results, as both may be properly treated in the same manner in this stage; that is, they should be let alone, merely keeping the patient within doors, covering as warmly as is consistent with comfort, and giving warm, bland drinks, as sage, balm, or catnip tea. As *diphtheria* is decidedly a disease of low aciont—that is, it is attended by diminished nervous power, so that nutrition is suspended or greatly crippled, there not being sufficient vital energy to convert dead into living matter, so that, although the patient may have some appetite, and digest well so far as the stomach is concerned, yet when the material comes to the point of transformation from dead to living matter the power is insufficient, and it is either thrown off by the kidneys, giving rise to *albuminaria*, or it may be thrown off in the form of a morbid secretion from the bowels, causing watery and albuminous diarrhea, very similar to and originating from a like cause as the rice-water discharges in cholera—therefore it becomes essentially necessary to attend to this condition at once, and use every means available to increase nervous power, prevent the waste from the system, and support the general strength until the disease has had time to run its course. With this idea kept prominently in view the proper regimen will at once present itself to the mind of any intelligent person, such as plenty of fresh air, frequent changing of the apparel and bed-clothes, cold water drank at will and applied several times a day to the whole surface by sponging, taking care not to expose much of the person to the air at a time, but sponging one

limb after another, then the front and afterward the back of the trunk or body, always rubbing the surface dry with a flannel cloth. But, should cold feel unpleasant to the patient, it should be changed for hot water. I say *hot*, for it must not be lukewarm, as that is most decidedly debilitating. It should always be used cold, or hot enough to make an impression; and it is well that the reader should remember this, as it will apply in all cases of disease of a low order. There is very little difference in the effect produced by hot and cold applied to the surface; both stimulate, and I always use that which feels most agreeable to the patient. Another thing it will be well to remember, that when a patient is suffering from thirst occasioned by dryness of the mouth and throat, hot drinks will allay it more completely and for a longer time than cold drinks; the reason is that heat increases the natural secretions from the mucous membrane, and cold has a tendency to check them, so that when a person is parched with fever a swallow or two of tea or simple water, taken as hot as the patient can swallow it, will much more effectually allay the tormenting thirst than any quantity of cold drinks; and in this way the stomach is saved from the disagreeable sensation of fullness that a free indulgence of cold water will occasion. Thirst will also be greatly relieved by the sponging recommended; it does this both through sympathy between the surface and internal parts, and also by being absorbed and carried into the circulation. Another effect of the want of nervous power, and consequent failure in the perfect elaboration of the nutrient material for entering into and making part of the living tissues, is that the imperfectly vitalized matter is deposited in the glands, causing morbid enlargement; and as the vitality is too low to continue the life of this material for any length of time, it soon breaks down, and, becoming a foreign substance, causes suppuration of the glands, and as there is not sufficient power to set up the reparative process, the ulcers are exceedingly difficult to heal, as in typhoid and other low fevers, deep-seated erysipelas, scrofula, etc. This imperfectly vitalized mate-

rial is also, in this disease, often deposited in the substance of the kidneys, causing great functional derangement, and may go so far as to disqualify them from performing their office, and, by leaving the uric acid in the blood, cause it to become an active poison, producing death by bringing on convulsions or coma, the patient presenting much the same symptoms as would be caused by an over-dose of opium.

This same badly elaborated material enters into and chiefly composes the morbid exudation that is thrown out upon the mucous lining of the mouth and air passages, which forms the most distinctive feature of this disease, and has given it its name. At first this presents itself in the form of a slimy and somewhat tenacious coating of those parts, but soon appears in distinct patches of a whitish membrane on the tonsils and roof of the mouth. I have seen it present the appearance of white chamois leather, with very distinct and abrupt outlines, and looking as though it might be easily rubbed off; but it adheres with great tenacity, and is often actually as firm as leather. This false membrane may extend into all the air-passages, as the duct leading from the throat into the ear, causing partial deafness; into the frontal sinuses, giving rise to uneasiness over the eyes, or distress as in sick *headache* or *sun-pain;* or it may dip into the cavity in the cheek-bone called *maxillary sinus,* and cause painful swelling of the face; or it may proceed down through the chink of the glottis into the windpipe, occasioning all the symptoms and the danger of true membranous croup. This last constitutes the most dangerous form of the disease, as it may speedily cause death by suffocation, by closing the chink in the glottis; for, even should there be no deposit immediately in that narrow passage, yet if it exists below pieces may become detached by coughing and plug up that orifice so effectually that the patient may die of strangulation as quickly as though choked by a cord.

The reader will now perceive the importance of sustaining the vital action of the system above the point at which this false membrane is formed, for recollect that the devel-

opment of the material out of which it is manufactured is not an essential part of the disease; many cases run their entire course without any manifestation of its existence except the slimy exudation before spoken of, coating the tongue and fauces in the early stage of the complaint, and if the simple but efficacious means which have been indicated be sedulously applied very few cases will ever run into that condition in which the blood becomes charged with the material of which this adventitious membrane is formed. In order that persons having the oversight of children should be able to meet this terrible disease with appropriate treatment at its very inception, and break it up in its forming stage, or hold it in check until the system may become fortified against the occurrence of its most formidable symptoms, they should make themselves perfectly familiar with the symptoms characterizing its first stages, so that no time may be lost, for in this disease every thing may depend upon taking an even start with the enemy; a very few hours of waiting to see whether the case will require treatment or not may give the disease such an advantage that no after exertions may become available in arresting the development of its very worst features.

We therefore insist that, when *diphtheria* is prevailing in the neighborhood, the very slightest manifestation of disturbance, common in the beginning of an ordinary cold, be met at once with at least this much: Keep the child within doors, dress a little warmer than common, keep from it all strong or indigestible articles of diet, give mild drinks, etc.

In order to impress it upon the mind of the reader we will hastily run over the course of treatment thus far recommended: Plenty of fresh air, frequent change of clothing and bedding, a free use of bland liquids—taken hot or cold, as the patient prefers—frequent sponging of the surface with hot or cold water, as feels best to the patient, and friction with dry flannel, and, we will add, as much easily digested food as the patient desires; and should he not desire sufficient to sustain the system, then give

cod liver oil and whisky, as much as his stomach will tolerate. When my patients express no desire for food at a time when I know they should be nourished, I prescribe gruel made by boiling cornmeal in water until it is well cooked, then add a little fresh butter, and salt and pepper to suit the taste. Of this I order two or three tablespoonfuls every two or three hours, with the regularity of important medicine, and no *medicine* is more important. Very few patients will refuse to take this, and it always agrees with the stomach. But remember you must not ask the patient whether he will take it or not, but make it, and take it to him, and tell him that I say he must take it, and, having once tasted it, he will probably take it with a relish. Give no purgatives in this disease, but if the bowels are not moved once in twenty-four hours give the following: Castor oil and honey each one tablespoonful, and whisky two tablespoonfuls; mix well together, and give a teaspoonful every two or three hours until the bowels are moved; repeat this daily. You may now, in addition to the above regimen, give the following:

℞ Tincture of the muriate of iron, ... ½ ounce.
Chlorate of Potash, ... ½ ounce.
Honey, ... 4 ounces.
Decoction of oak or sweet gum bark, or of blackberry root, 1 pint.
Give a tablespoonful of this every two or three hours, and mop out the throat with it several times a day.

If the disease still proves stubborn and the patient is becoming weaker, give quinine and carbonate of ammonia:

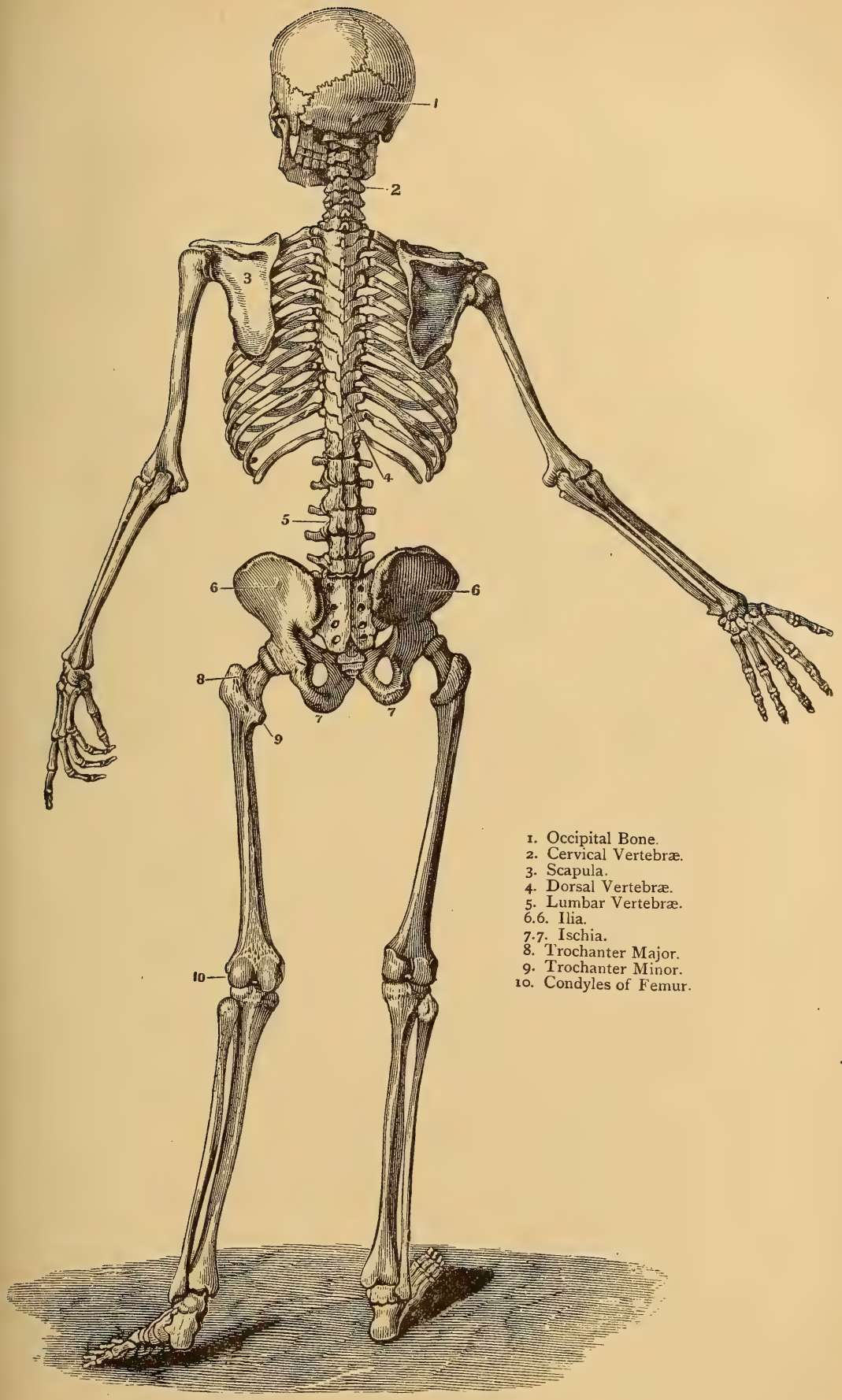
℞ Sul. of quinine, ... 20 grains.
Carb. of ammonia, ... 1 drachm.
Muriate of ammonia, ... 2 drachms.
Honey, ... 2 tablespoonfuls.
Water, ... ½ pint.
Give a tablespoonful every two or three hours.

If there be swelling of the glands about the throat or neck, put as much salt in hot vinegar as it will dissolve, and saturate a flannel cloth with this, and apply, repeating it often. A sock answers admirably, as it fits the neck nicely.

Great care must be taken to avoid a relapse. Some

years ago I attended a very interesting and promising girl of ten or twelve years of age, who had a severe attack of diphtheria; but, under the mild treatment recommended in the first stage of this disease, it yielded very kindly, and in a few days she resumed her studies at school; but, after having heated herself at play, she was caught in a shower of rain, and died the next day of strangulation.

Quite frequently patients have more or less paralysis as a sequence of diphtheria; very often this is confined to the organs of speech, sometimes the organs of sense, as seeing and hearing, are affected, sometimes the muscles of the neck. But friends need not feel much uneasiness, as I have never yet known a case in which the paralysis proved permanent. I once attended a sprightly boy of seven or eight years who barely escaped death from this disease, and for months after recovery he could not articulate intelligibly. His father doted on him, but, in view of this affliction being permanent, he regretted that his son had not died. I assured him that his child would recover, and so he did, completely. I trust alone to time for relief in these cases, and it has never disappointed me.



1. Occipital Bone.
2. Cervical Vertebræ.
3. Scapula.
4. Dorsal Vertebræ.
5. Lumbar Vertebræ.
6.6. Ilia.
7.7. Ischia.
8. Trochanter Major.
9. Trochanter Minor.
10. Condyles of Femur.

A BACK VIEW OF THE ADULT SKELETON.

INFLAMMATION.

Next to fever, inflammation is the most important subject that can claim our attention in connection with the great subject of diseased action to which the human system is liable. A very large amount of the sum of human ills has its origin in or is the result of inflammation, either as an original affection, or as superinduced in the course of other diseases: few cases of fever terminate fatally, except as a consequence of inflammation having been set up in some important organ. It may, therefore, be justly expected that this important subject should receive a very careful notice in this work; and the reader will doubtless pardon what would, on a more trivial subject, appear to be tediousness on the part of the writer. Now as every whole must be composed of parts, these parts must be considered separately, in order to obtain any clear idea of the qualities or properties or effects of all when conjoined or acting together.

In this way inflammation must be considered in order to be understood, and it must be understood as regards its causes, its nature, and its events, in order to be successfully managed or controlled; no person who has never considered the chain of morbid action constituting inflammation, with reference to each link in its structure, can comprehend it as a compound result, or understand even its description, much less be able to bring into use the best means for its treatment in its various forms and stages. I will, therefore, presume that my readers desire that I should not merely give the prominent symptoms of particular cases, and point out the usual means which experience

has taught us to use, but that I should also point out and explain the condition from which these symptoms arise, and give a reason for selecting the remedies which are used for their removal; and I hope that I may succeed in making the subject so plain and interesting, that its study may become a pleasure in place of a task.

Authors have described inflammation as a disease consisting of increased heat, redness, pain, and swelling. But this definition is very imperfect, as it only applies to one particular form of the disease; in other forms, one or more of these parts are wanting; for example, in *white-swelling* there is no increased redness, and sometimes no increased heat; and in chronic rheumatism, we occasionally meet with cases in which there is neither heat, redness, nor swelling, and little or no pain, and yet there is inflammatory action going on in the limb, which is silently altering the structures and destroying the usefulness of the member. Now a definition of a disease should embrace only that which is always present, and without which the disease could not exist. I think such a definition can be given. When upon the subject of fever, I said that it was, "to all intents and purposes, an incipient inflammation:" now what constitutes fever? It is composed of *nervous disturbance* and *capillary engorgement.* What else, then, is necessary to be added to these to constitute a fully formed case of *inflammation?* It is *structural change.* Inflammation may, therefore, be defined as a disease in which there is *morbid innervation, capillary engorgement,* and *structural change,* and that its most common and prominent phenomena, or symptoms, are increased heat, redness, pain, and tumefaction or swelling.

We will now take a view of what the microscope has revealed as taking place in the formation or getting up of a case of inflammation, and see if the above definition be correct or not; it will also serve to instruct us as to the intimate nature of the disease, and how the symptoms are manufactured that characterize its progress. We will take a condensed view of the subject as presented by Boltonbrunner. Upon placing the web of a frog's foot under the

microscope, he observed that a scratch from a pin, or the application of some irritating substance, first caused an irregular movement of the blood globules in the capillaries, they being pushed on for a space more rapidly than before, then stopping, oscillating, or moving back and forth; then taking a backward motion, but finally becoming settled, and again pursuing their regular course; then a period elapsed in which every thing seemed to be natural. Now the stage of disturbance just described may properly be termed the *period of excitement*, and the time of repose the *period of incubation*, which last will soon be succeeded by other appearances, viz.: the blood is seen to suddenly flow into the capillaries with unusual force, and these vessels appear to contract upon it, so that the circulation is greatly accelerated; important changes are now seen to take place: the blood undergoes a change, or fails to undergo the changes that should take place; the white corpuscles stick to each other, and to the sides of the vessels, and a portion of the blood is retarded. Now this may be termed the period of *irritation;* but soon the capillaries appear to lose their power of action, and suddenly dilate and become engorged with blood, which now has a very slow movement, or is entirely stationary, or is sometimes seen to even flow backward; this is the true period of *congestion*. Now all this may take place, and yet there is no *inflammation;* there is merely morbid innervation or nervous disturbance, and capillary debility and engorgement, just such as we have throughout the general system in fever, constituting its essential elements; and further, the departure from healthy action may here stop, if the cause has been a slight one, or if proper means have been used to allay the disturbance, and the torpid capillaries again regain their tone and resume their proper vital action, by which the blood will again be sent forward and the congestion removed. But suppose these favorable events do not happen, the next thing which is observed to take place is, the fibrin of the blood separates from the other constituents and unites into flakes, which, adhering to the little points formed by the white corpuscles having stuck to the sides of the minute vessels,

fill up their cavity entirely, so that no blood can pass; the most fluid part of the blood, which is called serum, now becomes effused into the cellular or areolar tissue, [the loose structure which unites all other parts together,] which, with the condensed fibrin and the retarded blood, causes hardness, redness, and tumefaction or swelling; we now have structural change; *inflammation* is now fully set up; so we see that nothing but this last movement is wanted to convert fever into inflammation; it is not then to be wondered at that inflammation is so often a consequence of fever.

Let us sum up what has been said: Inflammation is a disease consisting of morbid innervation, capillary debility, and structural change; the first is the direct effect of the cause acting upon the nerves, and is manifested by the disturbance which has been described in the action of the capillaries; the second is partly the effect of the first, for the nervous disturbance interferes with the regular supply of vital energy which the capillaries constantly require to sustain them in the performance of their proper function of propelling the blood, and also of performing such changes upon it as are necessary to fit it for nutrition, secretion, etc.; consequently, these are badly, or not at all, performed, and the blood presents an unusual appearance, and nutrition and secretion are suspended in the part, as it is in the same condition which obtains in fever. But besides this lack of nervous power, the capillaries may be still further crippled in their action by direct injury received, as mechanical injury or excessive irritation. The poison of contagion or malaria probably reaches the capillaries, and by its direct action tends to bring about this condition; which accounts for the profound congestion which we occasionally see attend attacks of fever.

This much must suffice upon the subject of the elements constituting inflammation; we will now hastily consider its progress, its products, its effects, and its modes of termination.

We traced the formative stages of inflammation until we arrived at the point of its complete development, resulting

in a suspension of the circulation, effusion of serum, and consolidation of fibrin; all of which can be more fully seen in *phlegmonous inflammation* as seen in the common boil, in the centre of which we often find a collection of pure black blood, which has been poured out by the distended and obstructed capillaries, around which we have a dense deposit of fibrin, giving the feeling of almost woody hardness, and, if cut into, resembles gristle; outside of this there is an effusion of serum which does not give the same feeling of hardness, and will even sometimes pit under the pressure of a finger; still outside of this there is some swelling from increased fulness of the capillaries. Now, though the circulation is almost or entirely suspended in the body of the phlegmon or boil, it is very much increased around the margin; hence more blood flows to and from the part than ordinarily, hence the redness and heat; for in whatever way animal heat is generated, it is an observable fact that it is always increased by an increase of arterial circulation, and in a greater degree when there is an obstruction in the capillaries, as in fever and inflammation. The pain is no doubt partly the result of heightened sensibility of the nerves, occasioned by the action of the cause, and increased by the influx of blood, but mostly by the pressure and tension occasioned by the swelling; so that the four most prominent symptoms of inflammation have been rationally accounted for, viz.: pain, redness, swelling, and increased temperature. Now this state of things cannot continue long without producing other changes: the part in which the circulation is suspended will soon die and become a foreign substance, and the absorbent vessels will cut it loose from the living tissue; but the absorbents often proceed farther and remove the surrounding living substance also, making an irregular cavity; when they do this, it is called *ulceration*. Sometimes this ulcerative process is salutary, as when it proceeds no farther than to remove the intervening substance between the dead matter and the surface, so as to admit of its discharge. Now, as soon as the absorbents have cut loose the dead matter, if the constitution be good and the surrounding flesh in a healthy condition, ulceration

will not take place; but instead, a mild, tasteless, inodorous, creamy-looking matter is poured out from the surrounding vessels—this matter is called *pus*, and the process of its formation is called *suppuration*. This pus is the material which first escapes from a healthy boil when it breaks, or is opened; the centre dead part is what is known as the *core*. Sometimes the absorbents are slow in separating the core, and it remains firmly attached to the bottom and sides of the cavity by shreds of cellular membrane. Now if the constitution be depraved, and there is a want of fibrin in the blood, as we often find to be the case in scrofula, in typhoid fever, and other cases in which the powers of life have been greatly reduced, there will not be a sufficient amount of this material deposited in the surrounding areolar or cellular tissue to prevent the pus which is secreted from finding its way into the meshes of this connecting membrane, and we will have a diffused tumor; sometimes the pus will in this manner find its way a long distance from where it is formed, and may cause much damage. If the vitality of the surrounding parts is of a very low order when the centre portion of a rising dies, the destructive process may extend to the adjacent tissues, and then the case will present an example of *gangrene*, or *mortification: gangrene* signifies a dying condition of parts, and *mortification* their condition when dead.

Sometimes an inflammation, after having become fully formed, in place of proceeding on to suppuration, ulceration, or gangrene, either from a favorable reäction occurring spontaneously or brought about by the use of proper remedies, becomes suddenly arrested in its progress, the capillaries again circulate the blood, the arteries cease throbbing, the pain diminishes, and the absorbents take up the morbid deposits and remove the swelling; this mode of termination is called *resolution*. There is yet another mode in which inflammation may terminate—namely, by *adhesion*, which takes place in this manner: Fibrin, or, as it is commonly called, coagulable or plastic lymph, when poured out upon the surface of a serous membrane, as the pleura, which covers the lungs and lines the ribs, or the peritoneum,

which envelops the bowels, often glues the surfaces together that are in contact or very near each other; and as this substance readily becomes organized by capillaries extending into it, these adhesions often remain permanent.

Inflammation, though generally a serious evil, is in not a few instances a very great good; for example, a sharp or jagged body penetrates the flesh, and remains imbedded among the tissues in such a position that there would be great danger in its removal; it continues to lacerate or compress the nerves upon every motion of the body, giving great torture; but this is not to continue always, for inflammation is soon set up in the surrounding parts; a deposit of plastic lymph is made in the areolar tissue, which serves to form, as it were, a cup to hold the pus which will shortly be secreted; the pus surrounds the offending body, and separates it from the sensitive tissues; ulcerative absorption removes the structures which intervene between the foreign body and the surface, and an opening is thus made through which it escapes or may be extracted. But sometimes, though rarely, this opening is made into an internal cavity, which may make the matter worse. In other instances, in place of pus being secreted, plastic lymph is thrown out, and is formed into a solid covering for the offending body; and as there are no nerves in this newly-formed substance, it may remain thus imbedded for many years without causing disturbance or inconvenience. Again, a wound has been received, and parts divided or torn asunder; if the surfaces are brought nearly in contact, this plastic lymph will soon be poured out as a result of inflammation, and fill up the intervening spaces, and, becoming organized, will again make both parts to be but one; but if the cut is made with a sharp instrument, and the sides accurately brought together, union will often take place by what is termed the *first intention;* that is, the vessels from the different sides unite so as to carry on the circulation as before; in this way deformities are remedied, as in the operation for hare-lip, etc.

Inflammation differs widely in its symptoms, mode of progression, termination, etc., as seen in different structures;

that which has been described corresponds only with it when seated in fleshy and sensitive parts, but bones, cartilages, fibrous membranes and sinews are all subject to inflammation; and as these structures differ widely from the muscles, areolar or cellular tissue, mucous and serous membranes, etc., with regard to both circulation and sensibility, the phenomenon presented by inflammation in them also differs in a like proportion, being slower in its progress, and not so readily running into the stage of suppuration, etc., but is more apt to become *chronic*, and result in alterations in the structure of the parts; but as these things will come up appropriately when we come to speak of particular inflammations, any further comments will be deferred until then. Tanner, with whom we principally agree, says:

The general principles of *treatment* only admit of being laid down. In the commencement, the cause of the inflammation should, if possible, be removed. Attempts must then be made to obtain resolution; or, if this seems impossible, the next best termination, which, in cases of external inflammation, will generally be suppuration; in internal, sometimes suppuration, sometimes adhesion. The important point then for consideration is this: How are these desired results to be best attained? For very many years but one answer has been given to this question, viz.: by the adoption of the *antiphlogistic regimen;* which consists essentially in the use of low diet, bloodletting, active purging, counter-irritation, mercury, and antimony. It is to be feared that these remedies still find favor with some practitioners; but I cannot help thinking that the more closely disease is studied, the smaller will become the number of the upholders of these antiphlogistic agents. My reasons for this opinion are: that when an inflammation is established, it is not possible to cut it short; that bleeding, unless carried to a very dangerous extent, will not diminish the amount of blood in an inflamed part; that bleeding will not render an impure blood pure; that depressing agents favor the extension of the morbid action, and deprive the system of the power of rallying from the effects of the disease; that in many instances of inflammation there is

depressed nervous power, and impaired action of the heart; and that in all cases a lowering plan of treatment is very badly borne in the present day, whatever may have been the case in former times.

It is a favorite theory with some pathologists that inflammation, as we now see it, is of a different type to that which formerly existed; perhaps being more readily excited by mal-nutrition, being more prostrating, and possibly being more dangerous to life, by incapacitating the system for the same degree of reäction as that which formerly followed an attack. In other words, the febrile symptoms accompanying inflammation are said to have altered from an inflammatory to a typhoid character. This view has been ably suggested by Dr. Alison; though it is well disputed by Professor Bennett, who believes that inflammation is the same now as it has ever been, that the analogy sought to be established between it and the varying types of fever is fallacious, and that bloodletting and antiphlogistic remedies have been all along opposed to a sound pathology. As these opinions cannot be discussed sufficiently fully in these pages, I would especially recommend the perusal of Dr. Alison's and Professor Bennett's very admirable essays to my readers; though, at the same time, I must say that I agree with Dr. Bennett. For if Dr. Alison be correct in all his assumptions, we must grant that not only the type but the cause of disease has changed; since, if we are to place implicit reliance upon the experience of Cullen, Gregory, Mason Good, and others, on some points on which they are likely to have erred from the imperfection of the means of diagnosis, we surely must credit their statements where simple observation alone was necessary. Yet, only fifty years ago—to take one example from many—inflammation of the brain was supposed to be the constant cause of insanity; and at Bethlem Hospital the system of treatment consisted of bleeding, purging, and vomiting in the spring months. A certain day was appointed in which the patients were bled, another in which they were purged, another in which they were vomited. They were bled again in May and June, *the precise time depending on the weather*. All this

had been the practice for many years, and no better practice, it was stated, was then known.

But something more may be said upon the practical bearings of the question, *i. e.*, upon the treatment of inflammation. On this point I think it may be said that those practitioners who have the greatest amount of practical experience, combined with an extensive knowledge of physiology, pathology, and therapeutics, are now mostly agreed that our study should be confined to simply attempting to guide the morbid process to a favorable termination; just in the same way as we at present try to conduct cases of typhus, small-pox, scarlatina, etc., through their natural progress, without making heroic and injurious efforts to cut short the disease. This object is to be obtained by supporting the vital powers instead of lowering them, and by assisting the excretion of effete products. During the early stages of the attack, all sources of irritation should be removed, so that the patient may enjoy perfect quiet of body and mind; the sick-room should be well ventilated, and kept at a temperature of about 60° Fahr.; the diet should be light, and cold water freely allowed; and if the febrile excitement be great, salines in small doses—Formulæ 312, 316, 318, 323, and 327—may be ordered. When the pulse becomes soft, good beef tea and nutrients are to be administered; and directly there are indications of weakness, we may be sure that wine is required, in quantity varying from four to twelve ounces in the twenty-four hours. As the period of crisis approaches, Dr. Bennett's example may be followed of giving a diuretic—spirits of nitric ether half a drachm, with or without ten minims of colchicum wine—thrice daily, to favor the excretion of urates; whilst, when a crisis occurs by sweating or diarrhœa, care is to be taken not to check it in any way.

The success of this plan is apparent from the following: During the last eight years Dr. Bennett has thus treated all the cases of pneumonia which have been under his care in the clinical wards of the Royal Edinburgh Infirmary, amounting to sixty-five; of which number sixty-two were dismissed cured, and three died; that is, one in 21⅔. Of

the sixty-two cases cured, fifty-five were uncomplicated and seven complicated; of fifty-one of the uncomplicated, forty were single and eleven double pneumonias, the average duration of the former being 14½ days, and of the latter 21 days; while of the seven complicated, one supervened on bronchitis and emphysema, two on typhus fever, one on bronchitis and pleurisy, one on pleurisy with effusion of eight weeks' standing, one on rheumatism with heart disease, and one on severe rheumatism with endocarditis and pericarditis; the average duration of the pneumonia in these seven being 21⅓ days. The three fatal cases were all complicated: the first, with uncontrollable diarrhœa and follicular disease of the mucous membrane of the small intestines; the second, with persistent albuminuria and anasarca; and the third with delirium tremens and universal cerebral meningitis.

When this result is contrasted with that obtained from an opposite course of treatment, it seems to me that all doubt on the subject must be removed. Thus, during ten years—from 1st July, 1839, to 1st July, 1849—648 cases of pneumonia were treated by different physicians, according to the rules then enforced by all writers, in the Royal Infirmary of Edinburgh; of which number 388 were cured, 38 relieved, and 222 died. Of 107 cases recorded by M. Louis in 1835, and treated by bleeding and tartar emetic, 32 died. So, of 648 cases treated by Rasori, in the hospital at Milan, by large doses of antimony, 143 died. Again, Laennec, who bled moderately at the commencement of the disease, regarded the mortality as one in six or eight. And lastly, Dr. Dietl treated 380 cases of primary pneumonia, in the Charity Hospital of Vienna, thus: 85 by venesection, one death in five resulting; 106 by large doses of tartar emetic, with one death in 5.22; and 189 by diet only, with one death in 13½, all the fatal cases moreover being complicated.

At the same time that bleeding as an antiphlogistic remedy should be rarely if ever practiced, it may be remembered that a small loss of blood may often be beneficial, particularly in relieving excessive pain, and in mode-

rating attacks of dyspnœa due to some obstruction to the circulation in the heart or lungs. As Dr. Bennett remarks: "I have often been struck, especially in cases where large thoracic aneurisms cause these symptoms, with the small loss of blood which will occasion marked relief. The same result may be hoped for in other cases where the congestion is passive, even when that is associated with active repletion of blood, followed by exudation. But I need scarcely remark, that this mere palliative object of blood-letting is not the ground on which the practice has hitherto been based, and that in this point of view it requires to be very differently explained." The same remarks apply to the use of tartar emetic; which is valuable in small doses, and combined with other neutral salts to favor excretion by the skin, kidneys, or intestines; but most injurious when employed in the heroic way often recommended.

With regard to the use of mercury, there appears to be every reason to believe that its utility in controlling inflammation, or in promoting absorption of the effused products, has been very much overrated; and indeed it seems highly probable that inflammatory diseases will progress more favorably without the use of this medicine than with it. Few practitioners, even now, would think of treating pericarditis or iritis without mercury; yet more than ten years have elapsed since Dr. John Taylor's valuable contributions to clinical medicine were published, in which it was clearly shown that the opinions then current on this subject required revision. For example, of the cases on which this excellent physician founded his observations, four got well without any treatment; in twelve, ptyalism was not followed by any abatement of the pericarditis; in six, ptyalism was followed by pericarditis; in three, by endocarditis; in two, by extensive pleurisy; in four, by pneumonia; in one, by erysipelas and laryngitis; in one, the pericarditis and pneumonia both increased in extent after ptyalism; while in only one instance was salivation followed speedily by relief, and in two or three by a gradual diminution. More recently, Dr. Henry W. Williams has cured sixty-four cases of iritis, of every degree of severity, including

its idiopathic, traumatic, rheumatic, and syphilitic varieties, without a dose of mercury; the treatment having chiefly consisted in sustaining the general system, in relieving pain by narcotics, and in keeping the pupil dilated by belladonna.

From all this it follows that, in the treatment of acute inflammatory diseases, practitioners must be content to trust more to nature, and less to heroic remedies, than they have been in the habit of doing; for it is highly probable that though we may be able to guide inflammations to a successful termination, yet we cannot cut them short, and any attempts to do so will merely increase the patient's danger.

Dr. Watson says in the latest edition of his work: "Years have passed since I have seen any instance of the disease (inflammation of the lungs) which has required phlebotomy. I may say much the same of inflammatory diseases in general. They have all, as I firmly believe, been less tolerant of bloodletting since the cholera first swept over this country in 1832."

I have thought proper to preface the remarks which I shall make upon this subject, by the above copious extracts from recent standard authors, in order to break down in advance, as much as possible, the prejudice which might arise in the mind of the reader against the doctrine I shall inculcate, and the practice I shall recommend; for I am fully aware of the difficulty of persuading people that the way that they have always seen any thing done, is not the best way; and more especially is this the case when the process by which it is done is mysterious, and not easily comprehended or understood; hence, opinions in matters of faith are much harder to change than opinions in matters of sense; and upon no subject is the prejudice of the masses harder to combat, than upon the mode of treating disease. Opinions which originated away back in the reign of ignorance and superstition, and which the light of science has banished from the minds of most of the profession long since, are still handed down from generation to generation by tradition among the people, and adhered to as the oracles

of divine truth. In this way, the absurdities taught by the early fathers in medicine are still preserved; and Hippocrates and Aristotle still influence, not only opinion, but practice; and thus the Humoral pathology, with all its ancient absurdities and errors, is still clung to, and made the basis of domestic treatment; and it is precisely this ancient error which the recent important change in the treatment of fevers and inflammations will find opposing its progress, both from a part of the profession itself, as well as from the masses. For although a physician of the present day would hardly acknowledge that he believed the doctrine, as understood by the ancients, yet he still often clings to the notion that disease is a *something* which enters the system—some entity, some enemy which has obtained ingress, and must be got out, in order to cure the patient; hence the inveteracy with which they cling to evacuants in fever: the fiend or goblin which is raising the disturbance in the system must be puked, or purged, or sweated out of the system; or a gap must be let down or opened by the lancet, and the rascal driven out while swimming in the blood; or if the goblin cannot be made to escape by any of these ways and means, then he must be poisoned, and arsenic or mercury, or some other poison, is exhibited.

Now I know that this, it will be said, is a caricature; that nobody, and especially no physician, so believes. I am sorry that I cannot take back what has been said, for then there would be no necessity for argument to sustain the position that disease is not a *thing*, but a *condition*—not something which must be driven out, but a mode of action that must be changed—a perverted or irregular motion of the machinery of life that must be set right or regulated; and certainly the means that will do this, with the least expense to the powers of life, with the least disturbance of the vital machinery, must be the best means. It would be very foolish to cut away wheels and remove braces, in order to get clear of an obstruction, when a little adjustment of the balance-wheel, or the removal of improper friction, will put all to rights without injury to the machinery. And wrong or perverted action can be set right,

or obstructions which interfere with the performance of the vital functions *can* generally be removed, without loss of power, without detriment to the integrity of the system, without chopping and scarring, or otherwise marring its fair proportions, but leaving it as whole and as sound, and as strong to endure, and as capable of performing all the beautiful and varied motions constituting health, as before any thing went wrong, or had got out of order.

Now it has been shown in the preceding pages that *fever*, however produced, consists in a certain *condition*, and that the indispensable elements of this condition are morbid innervation, or nervous disturbance, and capillary debility, and consequent engorgement; that without these there can be no fever, and that with them, in any considerable degree, there is, and of necessity must be, fever; and that to remove them is to cure the fever, of whatever grade or in whatever stage it may be. And we have also just seen, that these elements carried a little farther, far enough to produce *structural change*, or alteration of the composition of the structures implicated, constitutes *inflammation;* it will, therefore, follow, as a reasonable consequence, that the same great principles which should govern us in the treatment of fever, should also be observed in the management of inflammation; further, it has been shown that by removing the condition in which fever consists, the disease is destroyed, and has no further existence, and leaves the system as it was before the attack, provided this is done before any organic change has taken place in any of the vital organs, or other serious damage been sustained. The same is also true with regard to inflammation: let the condition in which it consists be removed, and the inflammation is removed; allay the nervous disturbance, correct morbid innervation, and arouse the torpid capillaries, and thus remove the obstruction, and, consequently, the congestion, and there will then be nothing left but the structural change, which the natural recuperative and restorative powers of the system will soon remove or set right; provided the disease has not progressed to the stage of decomposition. I therefore differ with Tanner, in regard

to the position that inflammation cannot be cured, but only conducted to a favorable termination; as I do with him and others, that typhoid fever cannot be cured; both may be cut short, broken up, or aborted, and made to terminate in health, without having run through the regular and often tedious and dangerous course that they will run if let alone, or treated with mere palliatives, and especially if badly treated. And now we will come to the main point: How can this be done? It can be very easily done; so easily, and by such simple means, as not to be sufficiently striking to gain the attention or secure the credence of the lovers of the marvellous, or the admirers of the heroic; but sober and reasonable minds will accept the plan, though it does work by small means, and accomplish a great deal with but little fuss.

My readers who have carefully followed me through the preceding pages are, I presume, almost prepared to anticipate me, and suggest the treatment themselves. The remedies are, anodynes, capillary stimulants, emollients, and alterants. If there be fever, as the febrile movement is a unit, it should be treated as other fevers, viz., give the fever syrup, etc.; but morbid innervation is more intense than in fever, and, being more local, is not so easily reached by remedies addressed to the general system; more powerful means will, therefore, have to be resorted to, and more stress laid upon the use of topical or local applications. It is in inflammation that opium exerts its greatest influence over diseased action; given so as to fully impress the system, it will often, alone, fulfil all the indications necessary in arresting inflammation. It soothes and quiets the restless, fretted nerves; arrests the morbid action in the nervous centres, from which undue or unnatural nervous power proceeds; and, by its secondary effects, acts as a powerful capillary stimulant, and relieves the engorgement, without which inflammation cannot exist. But, in order to insure success, it will often be necessary to administer opium, or its preparations, in doses large enough to satisfy even the lovers of the heroic; but we will speak of this more specifically when we come to treat of particular inflam-

mations. Nothing original is claimed for the use of opium in inflammation; it has long been used for allaying the pain and other distress attending this disease; and, recently, has been relied on, to a considerable extent, as a principal remedy; but I will endeavor to point out more accurately than has before been done, what we may expect from its use, the manner of its action, and how to graduate the dose, so as to produce the precise effect desired, without danger or injury to the system. The next indication is to excite capillary action; the best internal means for accomplishing this is the fever syrup, given in conjunction with opium; but much may be accomplished by local remedies, which should combine strong stimulant with anodyne properties; nothing, however, has produced such decisive effects in my hands as the chloroform liniment; but equal parts of camphor, turpentine, and laudanum do pretty well; or turpentine, laudanum, and spirits of hartshorn. I have repeatedly aborted local inflammation by these means alone, if applied early—have often even cut short the progress of an ordinary boil, after considerable swelling and great hardness had taken place, and the stage of suppuration was evidently near at hand, by saturating a pledget of cotton or lint, or a piece of soft rag folded several times, with the chloroform liniment. The smarting is intense for about a minute, when the chloroform begins to have its effect, and all suffering suddenly ceases. If the boil was greatly congested in the centre, and had commenced softening preparatory to forming an abcess, the liniment would cause the half disorganized blood and serum to escape through imperceptible openings in the skin, and the boil would presently shrink and disappear. I have, in this way, cured in a very short time what is known as *blood-boils*, which are generally slow in coming to maturity, and very apt to leave an ugly scar, which, on the face of beauty, is no small calamity; this the liniment prevents by causing the blood to escape, as we said, through imperceptible openings, or by arousing the absorbents and exciting them to take it away, and thus leave a whole skin. But still another means may be used with great advantage, especially in the most active stage of

inflammation; I mean emollients and refrigerants, [producing cold;] for recollect, that notwithstanding the capillaries immediately concerned in inflammation are in a state of torpor and passive congestion, yet, outside of these, and often mingled together, these vessels are in a state of excitement and are the seat of *active congestion;* that is, they act vigorously in propelling the blood, but many of their mouths or terminations are the seat of spasm, which prevents the blood from flowing on smoothly; hence the scarlet redness of the margin of a phlegmon or boil—hence, also, the throbbing and much of the pain. Then, again, the parts in which the phlegmon may be seated may be of an unyielding nature, at least give way with great difficulty under the pressure of the causes that produce swelling; and, by this means, compress the nerves, so as greatly to increase the pain. Now emollients, such as flax-seed or slippery-elm poultices, by their fourfold action of soothing iritation, relieving spasm, relaxing fibres, and lessening heat, act a very important part in the relief, and aid much in the absolute cure, of inflammation. Now, as cold and moisture possess nearly all the valuable properties of the emollient poultice, they may often be used instead, either as a change, or when the poultice is not easily obtained, or is difficult of application from the peculiarity of the seat of the disease; they are best applied by saturating cloths in cold spring or ice-water, and renewing them as often as they become warm.

But it may be inquired, How are these external remedies to be brought to bear upon deep-seated and internal inflammations? I answer, by repeating what I said on a former occasion, that the beneficent Author of our existence formed us so that there exists an intimate relation, a close sympathy, between internal parts and the external surface immediately opposite or over them; and this is the case, to nearly or quite as full an extent, between organs which are entirely free from the adjacent external walls, and have no peculiar dependence of function upon the opposite external surface, nor any nervous connection but that which is general, and exists through the medium of the origin of nerves

from the one great chain, composed of the brain, spinal marrow, and great sympathetic nerve and its little brains, or ganglia. But however mysterious this sympathy may be between the external surface and opposite internal parts, we know it exists, and physicians have all along availed themselves of its advantages in the treatment of internal or deep-seated diseases.

I have said, in another place, that a law governing the sympathies which exist between unconnected or distant parts is, that the same kind of impression which is made upon an associating part, is also made upon the part with which it sympathizes; this provision enables us to obtain almost as direct access to, and exert as much control over parts which are "not seen" as upon "those which do appear."

But in this state of existence we rarely enjoy a *good* without its forming a door through which *evil* may also enter: now many of the internal inflammations which we are called to treat have been produced by morbid impressions made upon the external surface, or upon an associating organ, as protracted cold and moisture upon the surface, inflammation of the parotid gland, [gland below the ear,] upon the breasts of females, or acting upon the breasts of ladies dressed for parties, upon the uterus, causing obstructions, etc., etc.

We have now taken a hasty view of inflammation with regard to its intimate nature, its phenomena or symptoms, and their cause, the manner of its progress, and its results or terminations; we have also considered the philosophy of its treatment, and suggested the remedies which have in our hands, and in the hands of others, proven most successful, and explained very briefly the *modus operandi* or manner of acting of these general remedies; it now remains that we take up individual or particular inflammations, and point out their symptoms by which they may be known or recognized, called *diagnosis*, then notice its causes, and, lastly, suggest the amount and variations of treatment which each case requires in order to abort or to cure it, or lead it to the most favorable termination.

CHAPTER I.

PARTICULAR INFLAMMATIONS.

PLEURITIS, OR PLEURISY.

INFLAMMATION of the pleura is selected for our first consideration, because it will admirably serve as a type of inflammation involving any other serous membrane, and because its treatment will serve as a basis for the treatment of all inflamed serous surfaces, and pretty well for all other cases of active inflammation, and so may serve to prevent much tedious repetition. Most persons are familiar with this disease, and would be able to recognize it without any description; but as its symptoms serve to point out the stage of the disease and the alterations which are going on which require particular treatment, we will therefore take a general view of its phenomena.

Symptoms.—The disease is ushered in with rigors, followed by fever, and an acute lancinating pain in the side, called a stitch; which pain is aggravated by the expansion of the lung in inspiration, by coughing, by lying on the affected side, and by pressure. There is also a short, harsh cough, the skin is hot and dry, the cheeks flushed, the pulse hard and quick, and the urine is scanty and high-colored. If we listen to the painful part of the chest at this period, we shall hear the dry inflamed membranes, the pulmonary and costal pleuræ, [membrane covering the lungs and lining the ribs,] rubbing against each other, and producing a *friction sound;* if the hand be placed on the corresponding part of the thorax, [chest,] this rubbing may also

be felt. But the sound soon ceases: either the inflammation terminates in resolution, and the two surfaces of the pleura regain their natural moisture and smoothness; or, the roughened and inflamed surfaces become adherent; or they become separated by the effusion of serum, and a kind of dropsy results, known as HYDROTHORAX. If the pleurisy has been severe, the effusion becomes excessive; (it may vary from an ounce to several pints;) and the fluid accumulating in the sac of the pleura compresses the yielding lung, suspends its functions, displaces the heart, and somewhat distends the thoracic parietes, [walls of the chest.] When the serous fluid is mixed with pus, the disease is termed EMPYEMA. If we listen to the chest now, we shall find the respiratory murmur diminished, in proportion to the quantity of fluid thrown out; where this is excessive and the lung is compressed backwards, flattened almost against the spinal column, no vesicular breathing at all will be heard, but instead we shall hear the air passing into the larger bronchial tubes, the condensed lung and the layer of fluid acting as conductors of sound; we then say that *bronchial respiration*, and *bronchial voice*, or *bronchophony*, exist. The bronchophony may be accompanied by a tremulous noise, resembling the bleating of a goat; it is then termed *ægophony*. If the lung be completely compressed, so that no air can enter even the bronchial tubes, then no sounds of any kind will be heard; but on the healthy side the respiration will be more distinct than natural, will be *puerile*. There will also be dulness on percussion all over the affected side, if the pleura be full of fluid; if it be only partially filled, we can judge of the quantity by placing the patient in different attitudes; for since the fluid will gravitate to the most dependent part of the cavity, so it will carry the dull sound with it. We shall also often be able to judge of the amount of the effusion by the dyspnœa which the patient suffers; since this will, of course, be most urgent when the lung is most compressed. At the same time, also, the sufferer is unable any longer to lie on the sound side; clearly because the movements of the healthy lung would be impeded by the superincumbent weight of the

dropsical pleura. The pain, moreover, no longer prevents his lying on the diseased side. If we measure the two sides of the chest, the side containing the effusion will be found the largest; we must remember, however, that in many persons the right half of the chest is naturally rather larger than the left.

After a time the symptoms begin to decrease, and absorption of the effused fluid commences. Supposing the lung to be bound down by adhesions, it will not expand in proportion to the absorption of the fluid; the affected side will then shrink inwards, and, instead of any longer remaining larger than the sound side, will become smaller.

Causes.—The most common causes of pleurisy are exposure to cold and wet. In cancer of the female breast pleurisy often occurs secondarily, either from the irritation of the pleura by a deposit of cancer beneath it; or in some instances, probably—as Dr. Walshe suggests—by the sub-inflammatory action on the confines of the diseased gland extending through the intervening tissues to the pleura. And, lastly, mechanical injuries will excite inflammation of the pleura. Thus the jagged ends of a fractured rib often give rise to it; while if they also wound the pulmonary pleura, air will escape from the lung into the pleural cavity. The presence of air in the pleura may also be due to other circumstances: thus it may arise from an external wound; or from ulceration from the extension of a tubercular cavity. When the pleura contains air alone, we say there is *pneumothorax;* when, as generally happens, there is a liquid with the air, we call the disease *pneumothorax with effusion.* The physical signs of pneumothorax are great resonance on percussion, with indistinctness of the respiratory murmur on auscultation; the patient's breathing, cough, and voice giving rise to a ringing metallic noise like that produced by blowing obliquely into an empty flask, and hence called *amphoric resonance.* When there is also liquid with the air, we obtain in addition a sound known as *metallic tinkling;* which results from a drop of fluid falling from the upper part the cavity and causing a little splash.

Treatment.—The indications in the treatment of pleurisy

are, first, to subdue the inflammation; and, secondly, to promote the removal of its products. As, probably, the more the patient is lowered, the more severe will be the results of the inflammation, I would advise the practitioner not to resort to bloodletting; but rather to trust to the administration of opium in full doses, while hot fomentations are sedulously applied to the inflamed side. When the pain is very severe, the removal of a couple of ounces of blood by cupping will possibly give relief sooner than any other proceeding, by unloading the congested vessels. But even before taking away this small quantity, it will be better to try the fomentations, together with dry-cupping. If the practitioner have any faith in the powers of mercury to control inflammation, he may administer calomel and opium. The bowels should be kept open by purgatives, if necessary; the diet should consist of gruel, arrowroot, and broths; and cooling, refreshing drinks are to be allowed.

If these means prove insufficient, and effusion takes place, we then endeavor to promote absorption. The patient must be kept on a moderate diet, free from stimulants; a succession of blisters should be applied to the diseased side; and purgatives and diuretics administered.—*Tanner.*

The above is good treatment so far as it goes, but it will often fall short of being sufficient to arrest the disease before effusion and suppuration take place; which should be accomplished if possible, as they greatly protract the sufferings and confinement of the patient, and often lead to fatal results—either directly, by compression of the lungs, or indirectly, by setting up diseased action in the lungs which may terminate in consumption. I would therefore recommend, that in addition to a free use of opium—say from two to four grains repeated every two or three hours, until a decided impression is made—the fever syrup also be given in doses of a tablespoonful between each dose of opium; as soon as the patient becomes fully impressed by opium, which may be known by the pain becoming less, breathing longer and deeper, and moving the ribs a little, in place of breathing entirely with the diaphragm and abdominal muscles, and especially if there should be itching of

the nose, and a feeling as of flies lighting on the face, the use of opium should now be suspended and need not again be resumed, unless a return of the pain demands it; sul. morphine may be used instead of opium, only using a third of the quantity. Dover powder, I think, is usually preferable to either; it must be given in five or six grain doses; or if opium or morphine is preferred, and the surface is hot and dry, a grain of tartar emetic, or two grains of ipecac., should be put into a glass of water, and a tablespoonful given every half hour. In addition to the hot cloths recommended by Tanner, I have the whole chest freely bathed with chloroform liniment; this often acts like a charm in relieving the stitch in the side, and otherwise quiets the patient, so as to generally render it unnecessary to repeat the opiate. If these means should fail to give decided relief in six or eight hours, I at once apply a fly-blister, and cover it with the hot cloths to hasten its action. I don't think it proper, as Tanner appears to do, to wait for effusion or suppuration to take place, but anticipate these events and prevent them; and the above course will prevent them, if it be commenced but a few hours ahead of the occurrence of these untoward events. Recollect you must apply a large blister, and repeat the application of the hot cloths every half hour at least, and let the blister remain until the cuticle has risen into small blisters, then remove it and apply a poultice of mush well greased; the mush should be made thin—thin enough to run—and poured on a large cloth, and spread out sufficiently large to cover all the affected side. Now, while it is hot, apply lard plentifully; it will be easily spread; you can't spread it well on a cool poultice unless it is first melted. The lard serves not only to keep the poultice from drying and sticking to the surface, but it has a soothing effect upon the blister, and, I think, aids in subduing the disease. At the time the blister is applied, a full dose of an opiate should be given, so as to keep the patient quiet while it is drawing, and, by blunting the sensibility, prevent the nervous excitement which is often caused by the drawing of a blister, and does much injury. But if a decided opiate is given when

it is applied, and the greased poultice prepared and put on right, the blister will cause very little suffering, and will be powerful for doing good.

Is it possible, says an old friend, that you will presume to cure pleurisy, and neither bleed, nor puke, nor purge? It *is* possible, my dear sir or madam; and I will not expect to cure it only generally, but will cure it always, if effusion has not taken place before I have time to bring my remedies to bear upon the case; and you can do it too: the course is a plain one, and need not be blundered in. But the great difficulty is, I fear you will not pursue the course long enough to see whether it will cure or not, but will resort to the old plan of depletion. The old plan has not always succeeded; we have heard of many lives being lost by pleurisy treated thus, and many cases of consumption developed by it; but I am aware that want of success does not always bring a remedy or physician into disrepute; it frequently does the contrary: it makes the doctor talked about, and kind friends say of the case, that it was a terrible one; that the doctor did every thing that man could do; he bled and re-bled, puked and purged, gave ever so much calomel and constant doses of tartar, and, just before the patient died, had a blister put on as big as a child's apron; but the man's time had come, and he went in spite of the doctor. Well, it was the way his father went, and the doctors bled him until the blood would not stain a sheet, but still he went.

Now this reminds me of what I once heard a distinguished professor tell. He said that, when a beginner, he was called to see a sick child in a family which had a long time employed the same physician; the child rather lingered, and the mother concluded it would die, and suggested to the doctor that she would like her old doctor to be sent for; she did not suppose he could do any good, but it seemed so natural to have him about when any of them were bad off; that he had attended on her poor father and mother when they died, and on her two dear little children that had gone, and she would feel bad if this child should die without his being there. "Well, madam," said the young doctor, "I don't want him here; if

he is not unskilful, he is, at least, unlucky, from what you say; and as I do not intend this child to die, we will have no use for him;" and they did not send, nor did the child die. And thus it is that people will hang on to the same unlucky doctor, and the doctor to his unlucky means, though the grave is glutted with victims; but their time had come, and people do not live always, etc.; but it appears from statistics, that when a patient has pleurisy or pneumonia, his time will be five times more likely to come if he be treated by depletives, than it will if the doctor does nothing but look on, and let the disease *rip*.

CARDITIS, OR INFLAMMATION OF THE HEART.

As inflammation of the heart and its appendages presents many of the symptoms of pleurisy or pneumonia, and most commonly occurs in conjunction with one or both of these diseases, it is often very difficult to diagnose it, or point out the symptoms which will determine its presence or absence; and as the treatment is precisely the same, it is of little consequence whether the inflammation be known as involving the heart or the lungs only, or its investing membrane, or only the pleura, or whether both are implicated. I might therefore properly enough omit any description of this disease, as many other writers have done, and especially as many terms are obliged to be used not understood by the common reader; but as some may be curious in making distinctions, and would like to have every disease described, whether leading to practical advantage or not, I will gratify them by copying, pretty much entire, what Tanner says upon the subject, as he is briefer and more explicit than any other writer I have seen upon this subject.

PERICARDITIS, OR INFLAMMATION OF THE EXTERNAL SEROUS COVERING OF THE HEART.

Causes.—It frequently arises from acute rheumatism, from the contaminated state of the blood produced by renal disease, from damp and cold, and from mechanical injuries. Dr. Ormerod reduces all cases of pericarditis to two classes: 1. Rheumatic pericarditis; 2. Non-rheumatic pericarditis.

In the first, the disease is always well marked, it is associated with affections of the joints, women appear rather more subject to it than men, and it is rarely directly fatal; in the second, the inflammation occurs at a later period of life, is most common in men, occurs most frequently in bad constitutions, and is very often fatal.

Symptoms.—These are high fever; pain referred to the region of the heart, often darting through to the left scapula, [shoulder-blade,] upwards to the left clavicle [collar-bone] and shoulder, and down the arm; violent palpitation, the motions of the heart being tumultuous, and perceptible at a distance from the patient; irregularity of the pulse; hurried respiration; incapacity of lying on the left side; strong pulsation of the carotids; anxiety of countenance; and frequently noises in the ears, giddiness, and epistaxis, [bleeding at the nose.] As the disease advances, there is extreme debility, cough, suffocative paroxysms, occasionally a tendency to syncope, [fainting,] and œdema of the face and extremities; the heart's action also becomes much weaker, the impulse irregular and trembling, and the sounds weakened and altered in character. In severe cases indications of disturbance of the nervous centres frequently show themselves; especially great restlessness, distortion of the features, tetanic spasms, and delirium. All these symptoms often vary much in different cases; thus, as Dr. Hope has remarked, if the effusion which results from inflammation consists almost entirely of coagulable lymph, or if the serum thrown out has been rapidly absorbed and adhesions early effected, the circulation will be less interfered with, and less suffering will result, than in those more formidable cases where there is a copious fluid effusion painfully distending the inflamed membrane, pressing upon the heart, and embarrassing its movements.

On practicing auscultation, we shall find, in the earliest stages, increased intensity of the natural sounds; if endocarditis coëxists, as it so frequently does, a loud systolic *bellows-murmur* will also be heard. Very early, too, a distinct *alternate rubbing* or a *to-and-fro sound*, as Dr. Watson terms it, will be audible. The bellows-sound indicates

fibrinous deposits in the texture as well as on the surface of the valves, from inflammation of the internal membrane of the heart, the endocardium, and it generally continues for life. The to-and-fro sound is indicative of inflammation of the pericardium, and it generally ceases in a few days when this membrane becomes adherent to the heart, as it always does if the patient survive. When copious effusion takes place, we shall have dulness on percussion over a larger surface than in health; if the fluid does not become absorbed, we say that *hydro-pericardium* exists, which usually proves fatal.

If we classify the physical signs of pericarditis, they will be as follows:

1. Sensations of friction communicated to the hand. 2. Friction-sounds: the "attrition murmurs" of Hope. 3. Extension of dulness over the heart, resulting from liquid effusion. 4. Friction signs, attended with, or preceded by, valvular murmurs. 5. Signs of eccentric pressure analogous to those of empyema. 6. Signs of excitement of the heart. 7. Signs of weakness or paralysis of the heart.

Prognosis.—Pericarditis, especially the rheumatic variety, is not so much to be feared for its immediate danger as for the traces of permanent injury which it leaves behind. The endocarditis which so frequently accompanies it, especially produces mischief to the valves of the heart. Hence an individual, after apparent recovery, seldom becomes as strong as he was before the attack; he suffers occasionally from cough and shortness of breath, and from palpitations of the heart on moderate exertion. Sometimes the symptoms remain latent for a few years; that is to say, they are not appreciable to the patient, who flatters himself that he is free from all traces of his attack. But after a time —much shorter in those who have to work hard for their daily bread, than in the well-to-do members of society— the health begins to fail: the weakness, difficulty of breathing, and palpitations return; dropsical symptoms set in; or perhaps another attack of inflammation takes place, and proves fatal.

Treatment.—In no disease was the lancet used with a more unsparing hand, only a few years since, than in inflammation of the pericardium. More extended experience has shown us, however, that this heroic and sure method, as it was deemed, of extinguishing the morbid action, is not only uncertain, but often very dangerous. Then we were also taught the great importance of rapidly getting the system under the influence of mercury after bleeding. Yet when we look to the authorities of the present day, what do we learn? The question is well answered by Dr. Markham, who says: "We find one of the most observant and practical physicians amongst us admitting that the firm faith which he himself once reposed in the efficacy of this remedy, has been undermined by the truth-telling effects of further experience." The remarks already made on the use of mercury in inflammation quite confirm this opinion.

The treatment which I adopt is that practiced by many for the relief of acute rheumatism; the two principal remedies being opium and the vapor bath. From these agents I believe that I have seen the greatest benefit; and certainly in no instance have they been prejudicial. They give great relief to the patient's sufferings, without inducing debility; and they in no way complicate the symptoms. The quantity of opium which will be needed will vary with the severity of the pain and restlessness; but usually full doses, one grain, every three or four hours, will be wanted. Sometimes one vapor bath suffices: in other cases, it is necessary to repeat it daily, for three or four times. Alkaline drinks will also do good.

In most cases it will be necessary to administer a few doses of some purgative; the neutral salts will generally agree well. At first the nourishment should be light, consisting of gruel, arrow-root, and mutton broth. Directly the strength begins to fail, however, the diet must be more strengthening; and milk, strong beef-tea, and wine freely allowed. Dr. Stokes states that he is convinced patients are often lost from want of stimulation at the proper time; and he directs us to give support directly the pulse becomes

feeble or intermittent, or the jugular veins [veins of the neck] become turgid, or pallor and coldness of the surface set in, or a tendency to faint upon exertion is manifested. "It may be laid down as a general principle that there is no local inflammation whatever, the mere existence of which should prevent the use of wine, if circumstances require it. In two cases especially, namely, cerebritis [inflammation of the brain] and pericarditis, we find the greatest timidity in practice with respect to the use of wine. Yet even in the first case it may be required; and in the second, its employment is imperative, when, as too often happens, excessive depletion has been resorted to."

Absolute repose of body and mind in all cases is important.

When the effusion into the pericardium is abundant, a large blister should be applied over the præcordia, [region of the heart,] or a succession of blisters may be necessary. The iodide of potassium has been advantageously administered to promote absorption. It has been proposed, as a forlorn hope in obstinate hydro-pericardium, to remove the fluid by the introduction of a trocar and canula. M. Aran, physician to the Hôpital St. Antoine, Paris, relates a case of pericarditis with copious effusion in a young man aged 23, which he treated by an injection of iodine. The pericardium was punctured from below upwards, with a capillary trocar, in the fifth intercostal space, a little below the spot where the dulness on percussion was well marked; about 28 ounces of a transparent reddish serum were removed. A mixture, formed of four drachms of tincture of iodine, fifteen grains of iodide of potassium, and an ounce and a half of water, was then injected without causing any pain; a drachm or two was allowed to escape before closing the wound. The fluid having reäccumulated, the operation was performed a second time with a stronger injection, formed of equal parts—twelve drachms—of tincture of iodine and water, with one drachm of iodide of potassium. The treatment was successful.

ENDOCARDITIS.

Endocarditis, or inflammation of the membrane which lines the interior of the heart and its valves, is of great interest, owing to the severe organic diseases which spring from it.

Symptoms.—It chiefly gives rise to a sense of oppression and uneasiness at the præcordial region; fever; small, feeble, and intermittent pulse; great anxiety; cold sweats; oppressive dyspnœa; jactitation; and syncope. When the inflammation is only of limited extent, or when it assumes a chronic form, the symptoms are much milder and more obscure.

Diagnosis.—If we apply the hand to the chest in simple endocarditis, the action of the heart will appear to be very violent; sometimes a vibratory thrill will be felt. Percussion often discovers an augmented extent of dulness in the præcordial region; this dulness may be distinguished from that caused by pericardial effusion, by the beat of the heart appearing superficial instead of remote and distinct. If we listen to the heart's action we shall detect a bellows-murmur, the most constant and characteristic of the phenomena of endocarditis. The murmurs of purely acute endocarditis are thus arranged in order of frequency by Dr. Walshe: Aortic obstructive; mitral regurgitant; aortic regurgitant; aortic obstructive and mitral regurgitant together; aortic obstructive and regurgitant together. Pulmonary systolic and diastolic murmurs are infinitely rare. Dr. Walshe has never observed acute obstructive mitral murmur, nor acute regurgitant tricuspid murmur.

For the further consideration of the physical signs, see the section on Diseases of the Valves of the Heart.

Terminations.—The terminations of acute endocarditis are permanent valvular disease, followed by implication of the heart's substance, and all their combined consequences. Death rarely occurs from the acute disease.

Treatment.—This must be the same as that recommended for pericarditis.

CARDITIS.

Carditis, or inflammation of the muscular substance of the heart, seldom occurs as a distinct affection; being generally combined with pericarditis or endocarditis, or with both. An instructive example has been recorded by Mr. Salter, in which the disease ran its course in seven weeks. It commenced with an acute pain in the left side of the chest, which came on when the patient was walking, lasted a short time, and recurred about a week afterwards, whilst he was using the same exercise; it subsequently became very frequent, and was induced by the slightest exertion. When Mr. Salter first saw him, about a week before his death, there was orthopnœa, and an uneasy sensation or dull pain referred to the stomach and middle of the sternum, [breast bone.] Venesection, calomel and opium, and counter-irritation, were the means adopted to stay the disease; but they were unavailing, and death took place. At the *post-mortem* examination the pericardium was found inflamed, especially its diaphragmatic portion; its vessels were distended, and spots of ecchymosis [effusions of blood] were found beneath the serous membrane. The substance of the heart was moderately firm; but the left ventricle had almost entirely lost the color of muscle, pus could be scraped from its surface, and in some parts there were small cavities in the muscular substance containing pus.

VALVULAR DISEASES OF THE HEART.

Causes, etc.—Most of the alterations in the internal lining membrane of the heart result from inflammation, which gives rise to a deposit of lymph upon or beneath the serous membrane. The valves thus lose their thinness and transparency, become thick, puckered up, and adherent to each other or to the opposite walls of the channel. Independently of inflammation, the valves may become covered with warty vegetations or excrescences, or they may be converted into bone.

The effects are twofold: either to contract and narrow the orifice, and so obstruct the passage of the blood—*valvu-*

lar obstruction; or by thickening and shortening the valves to make the orifice more or less patent, [open,] and hence permit of regurgitation of blood—*valvular insufficiency, regurgitant disease of valves*, etc. There may be only valvular obstruction or valvular insufficiency in any given case; but often these conditions coëxist.

Diagnosis.—In the diagnosis of these diseases, attention must be directed, firstly, to the physical signs; and secondly, to the chief physiological or functional symptoms.

1. *The Physical Signs.*—The natural sounds of the heart are liable to be modified or changed by disease, causing either sound or both to be accompanied or to be supplanted by a noise which has been aptly compared to the blowing of a pair of bellows; hence it is termed by us a *bellows-murmur*, and by the French a *bruit de soufflet*. A bellows-murmur may be harsh, or rough, or cooing, or whistling, or musical, but these modifications are of little importance; of whatever nature, it is caused either by the presence of obstructions which impede the free flow of blood through the heart and its great vessels—producing an organic murmur; or by a supposed peculiar condition of the blood—giving rise to an inorganic murmur. When the valves of the heart are affected so that they act ineffectively, an organic bellows-murmur results.

2. *Physiological and Functional Symptoms.*—The following are the chief: Difficulty of breathing, varying from the slightest dyspnœa to the most severe orthopnœa; much increased on ascending a height or making any exertion. Palpitation and irregular action of the heart, with the sounds and murmurs discoverable by auscultation, etc. Irregular pulse. In mitral disease, the pulse is generally soft and irregular; in aortic, hard, jerking, but regular. Congestion of the lungs; bronchitis; pneumonia; pulmonary hemorrhage, with or without pulmonary apoplexy; these symptoms being most urgent in mitral disease. Hemorrhages from the nose, bronchial tubes, or mucous membrane of the stomach. Dropsy. Enlargement of the liver and spleen, with disorder of the digestive organs generally. A peculiar appearance of the counte-

nance, wherein the face is puffed, the cheeks flushed and of a purple hue, the lips congested, and the eyes bright.

As time advances, the heart disease generally becomes more aggravated: the patient becomes weak, and suffers immediately from over-exertion, mental emotion, improper food, or exposure to wet and cold; and subsequently death ensues, either suddenly from syncope, or gradually from the progress of one or other of the secondary affections. The latter termination is the most common.

Treatment.—In the treatment of the valvular diseases of the heart, three indications have generally to be followed:

1st. To abate inordinate action of the heart by sedatives, as digitalis, hydrocyanic acid, and morphia. 2d. To ward off or gradually relieve the results of the cardiac disease, such as pulmonary congestion, pneumonia, hemorrhage, congestion of the liver and kidneys, dropsy, etc., by a nutritious diet, and by maintaining the various secreting organs in a healthy state; and 3d. To endeavor to give strength and tone to the heart, so as to assist it to do its work, by nourishing food, a duly regulated supply of stimulants, breathing pure air, warm clothing, early hours, avoidance of all bodily and mental excitement, and by the administration of tonics—especially the various preparations of steel.

HEPATITIS, OR INFLAMMATION OF THE LIVER.

Fever, tension, and pain of the right hypochondrium, often pungent, as in pleuritis, but sometimes dull, pain in the clavicle and top of the right shoulder, uneasy lying on the left side, difficult respiration, dry cough and vomiting, are the characteristics of hepatitis; very frequently there is some degree of jaundice.

Hepatitis has generally been considered of two kinds; the one acute, the other chronic; the former showing the essential character of genuine inflammation; the latter exhibiting symptoms of less violence as to their inflammatory tendency, but an enlargement and hardness of the liver, with an obtuse pain.

Besides the causes producing other inflammations, such as the application of cold, external injuries from contusions,

blows, etc., this disease may be occasioned by violent exercise, by intense summer heats, by long-continued intermittent and remittent fevers, by high living, and an intemperate use of vinous and spirituous liquors, but more particularly the latter, and by various solid concretions in the substance of the liver. In most cases, the exciting cause of acute hepatitis will be found to be the partial application of cold or wet when the body is heated or over-fatigued by violent exercise. Derangement of the digestive organs, suppressed secretions, inflammations, compression, fevers, and mental solicitude, are very general causes of obstructions and diseases of the liver.

In warm climates, this organ is more apt to be affected with inflammation than any other part of the body, probably from the increased secretion of bile which takes place when the blood is thrown on the internal parts by an exposure to cold; or from the bile becoming acrid, and thereby exciting an irritation in the part. An inflammation of the liver, and the diseases consequent thereon, are indeed affections more frequently to be met with in warm climates than in cold ones. The liver, in warm climates, seems to be the seat of disease nearly in the same proportion that the lungs are in more northern latitudes.

The acute species of hepatitis comes on with a sense of chilliness, followed by pain in the right hypochondrium, sometimes dull, sometimes sharp, extending up to the clavicle and shoulder of the right side, which is much increased by pressing upon the part, and is accompanied with a cough, oppression of breathing, and difficulty of lying, except on the side affected; together with nausea and sickness, and often with a vomiting of bilious matter; the intestines are generally inactive, and the stools show a deficiency of biliary secretion, or at least of any intermixture of it with them; the urine is of a deep saffron color, and small in quantity; there is loss of appetite, great thirst, and costiveness, with a strong, hard, and frequent pulse, of from ninety to one hundred in a minute, and sometimes intermitting; the skin is hot and dry at the same time, and the tongue covered with a white, and sometimes a yellowish

fur; and when the disease has continued for some days, the skin and eyes become tinged of a deep yellow, particularly when the inflammation is produced by calculi in the parenchyma, or substance of the liver.

In hepatitis, as well as in other diseases, we do not always find the symptoms of the same degree of violence as they are described in the definition: thus in some cases the fever is severe, in others it is scarcely perceptible; in some instances the pain is very acute and violent; in others, collections of pus have been found after death, when no pain has been felt. When the pain is seated deep in the substance of the liver, as that possesses little sensibility, the pain is usually obtuse; but when the surface is affected, it is acute, and apt to spread to the diaphragm and lungs, producing cough.

Both ancient and modern nosologists have made a distinction between the symptoms that occur when the inflammation occupies the convex or upper surface of the liver, and those that are present when the disease affects the concave or lower surface. It is said, when great difficulty of breathing, and cough, accompany the pain in the region of the liver, that these symptoms indicate the inflammation to be seated in the superior or convex part; but where the inflammation occupies the concave or inferior surface, which lies contiguous to the stomach and duodenum, there is more sickness and vomiting; and moreover, the pain is not so violent in the region of the organ as in the other instance.

It seems probable, says Dr. Cullen, that acute hepatitis is always an affection of the external membrane of the liver, and that the parenchymatic is of the chronic kind.

The chronic species is usually accompanied with a morbid complexion, loss of appetite and flesh, lowness of spirits and despondency of mind, headache or giddiness, general weakness, a morbid sensibility of the nervous system, costiveness, indigestion, flatulency, acidity, and pains in the stomach, a yellow tinge of the skin and eyes, clay-colored stools, high-colored urine, depositing a red sediment and ropy mucus; an obtuse pain in the region of the liver, extending to the shoulder, together with a sense of weight,

unusual fulness, and some enlargement and hardness of the organ, and not unfrequently with a slight difficulty of breathing, or dyspnœa. In some cases of chronic inflammation of the liver, the pulse has been observed to intermit.

The symptoms are, however, often so mild and insignificant as to pass almost unnoticed, as large abscesses have been found in the liver upon dissection; which, in the person's lifetime, had created little or no inconvenience, but which we may presume had been occasioned by some previous inflammation.

We may readily distinguish hepatitis from pneumonia by the pain in the former extending into the shoulder; by the sallowness of the countenance; by the cough being unaccompanied by expectoration; and by the less degree of dyspnœa. The heat and pain not being increased upon taking any thing into the stomach, its being able to retain whatever liquids or medicines are received into it, without the immediate rejection of them, and the less prostration of strength, will distinguish it from gastritis. Hepatitis may be distinguished from spasm of the gall-ducts, by there being no nausea, by the pain being permanent, by the pulse being one hundred and upwards in a minute, and by the patient always preferring to keep the body in a straight quiescent posture; whereas, the greatest ease, when there is spasm of the gall-ducts, is obtained by bending the body forward on the knees.

Hepatitis, like other inflammations, may end in resolution, suppuration, gangrene, or scirrhus, in which the liver becomes swelled and hard; but its termination in gangrene is a rare occurrence. It is frequently accompanied with chronic obstruction. Its tendency to run into suppuration is not so great in this country as in warm climates. Indeed, it is rather a rare occurrence here. The period of suppuration is influenced by the degree of inflammation, the season of the year, climate, and the remedies that have been employed. Scirrhus may exist in the liver without previous active inflammation.

The disease is seldom attended with immediate fatal con-

sequences, and is sometimes carried off by a hemorrhage from the nose or hemorrhoidal vessels; and likewise by sweating, by a diarrhœa, or by an evacuation of urine, depositing a copious sediment. In a few instances it has been observed to cease on the appearance of erysipelas in some external part. Serous effusion in the cavity of the abdomen is sometimes a consequence of hepatitis showing itself under the form of ascites, or dropsy of the belly.

The most favorable signs in hepatitis are, a gradual abatement of the fever, an improvement in the complexion, the return of the appetite, and an increase in the bulk of the body. Intensity of pain in the region of the liver, a full and frequent pulse, considerable heat, thirst, dry skin, costiveness, and frequent rigors, denote approaching suppuration.

When the inflammation terminates in the formation of matter, the inflammatory symptoms gradually subside and give way to those of suppuration. The fever becomes somewhat intermittent, frequent rigors or shiverings are felt, the sense of weight in the part increases, the pains are less acute but throbbing, the tongue is white, with flushings of the countenance; and when the abscess is formed near the edge of the liver, or towards the concave surface, it not unfrequently projects under the false ribs, so that the fluctuation may be felt externally. If the abscess forms on its convex surface, it points towards the lungs, corrodes through the diaphragm, and distends the pleura, which it sometimes pushes through the spaces between the ribs. At last the matter finds its way through the intercostal muscles, and may be distinguished through the skin. If the abscess is apparent, there will be found a fluctuation in the centre, while the circumference remains hard. A change of color in the skin only occurs where a great quantity of matter is accumulated; or where, by its bad quality, it changes the color of the teguments. If much pressure on the tumor with the fingers is employed, a pulsation may often be felt, particularly in irritable habits. Sometimes the inferior lobe of the lungs contracts adhesions with those points of the diaphragm connected with the abscess,

by which means the matter will be discharged by the bronchiæ spit up; this is, however, a rare occurrence; but it often happens that the matter is effused into the cavity of the chest, and forms a purulent empyema. It likewise happens now and then that the sides of the abscess, forming adhesions with the stomach, or much oftener with the colon or large bowel, the matter is discharged into their cavity, and evacuated either by vomiting or stool.

On dissection of those who die of hepatitis, the liver is often found much enlarged and hard to the touch, its color is more of a deep purple than what is natural, and its membranes are more or less affected by inflammation. Dissections, likewise, show that adhesions to the neighboring parts often take place; that tubercles, as well as vesicular cysts, denominated hydatids, are sometimes found in it; and that large abscesses, containing a considerable quantity of pus, are often formed in its substance. Biliary calculi are now and then met with. In a few instances, the livers of those who have died of this disease have been found in a putrid state, resembling a honeycomb; but the most common appearance to be observed in those who die of diseased liver, is the formation of tubercles in its substance. The liver has not unfrequently been found after death to be indurated or otherwise injured, without any marked indication of disease during the life of the patient, except dyspepsia or simple indigestion.

Treatment.—What constitutes great difficulty in managing hepatitis is, that in many cases the symptoms which are primary and indicative of inflammatory affection, are but very slightly marked. The pain in the side is often not constant or acute, the patient himself takes little notice of it, seldom mentions it unless he is asked about it, and when questioned concerning it, he only tells you, perhaps, that he has felt at times slight pains about the pit of the stomach, or in the right side. It is only by observing the secondary symptoms, such as a diarrhœa, or a short dry cough, and pain felt at the top of the shoulder, or that there is a degree of fulness or tenderness on pressing on the organ, with some yellowness of the eyes and countenance, that the true

state and nature of the disorder is to be ascertained in such cases.

Perhaps this disease has generally been worse managed than any of the other inflammatory diseases. It will not usually bear depletion and the antiphlogistic regimen as well. The reason may be found in the nature of most of the remote causes of the disease, and in the peculiar circumstances connected with the circulation of the organ, and also in its grade of vital activity, and the kind of office it performs in the animal economy. The remote or predisposing causes of hepatitis are mostly of a debilitating or depressing character, having a tendency to bring about a low state of vitality, so that debilitants, or depletives, cannot be appropriate remedies; the peculiar circulation in the liver also forbids their use, which I will very briefly describe, so that the reader may perceive the force of this reason for avoiding depletion: The blood, after having circulated through the stomach, bowels, and other contents of the abdomen and pelvis, is collected into one large vein called *vena portarum*, or vein of the liver, and enters this organ, and is distributed through its substance in the manner of an artery. What are the objects of this arrangement we cannot now stop to consider, but it is from this venous blood that the bile is secreted, and it is supposed that the blood undergoes other changes in the liver besides that which results from having the gross materials of which bile is composed separated from it; but whatever are its uses, it is certain that this arrangement causes a very slow and weak movement of the blood, and renders the organ easily influenced by depressing causes; the vital manifestations of the liver are also of a very low order, as might be expected from the presence of so much venous blood, and hence reäction against the influence of depressing agents is also feeble; all of which will naturally heighten the pernicious effects of any measure which has a tendency to weaken or lower the energies of the system. It is true, the liver receives some arterial blood through the hepatic arteries; but these appear ridiculously small in proportion to the great size of the organ, and can evidently merely

serve to supply its substance with the materials of nutrition sufficient to keep up a low order of organization; and we accordingly find that its sensibility and irritability are very deficient. Arterial circulation is much better in the investing membrane of the liver than in the gland itself; it is also better supplied with nerves of sensation; hence, inflammation, seated in it, is of a more active character, and occasions much acute suffering — it complains very much as the pleura does when it is inflamed.

We see, therefore, that inflammation of the liver must be treated with reference to all those circumstances which render the reäctive powers of the liver very feeble: such means as will arouse the capillaries and excite absorption of morbid deposits, without inducing further debility, can alone be used with advantage. The best internal means for accomplishing these results I have found to be the *fever syrup*, given in full doses, viz.: a tablespoonful every two hours, or the following pill: sul. quinine thirty grains, blue-mass twenty grains, piperin ten grains, oil of sassafras ten drops. Make fifteen pills, and give one every two hours; or the pills and the syrup may be given alternately, making the dose of each four hours apart. Once every day the bowels must be moved, and if the above means fail to produce at least one or two free evacuations, a tablespoonful of castor oil, or epsom salts, must be given, and aided, if necessary, in the course of three hours, with injections of soapsuds.

The best local remedies are: first, the chloroform liniment, or a poultice of mush, or cloths wrung out of hot mustard water, or simply hot water sprinkled with the liniment. These external means must not be looked upon as something that may be done if convenient, or left undone if not convenient; they are a very important part of the treatment, both in this and other inflammatory diseases in which they have been or will be prescribed; and I wish it understood that my plan of treatment cannot be justly blamed for want of success if the external remedies are neglected. But if the patient is not materially relieved by these means in twenty-four hours, secondly, a blister—

a good fly-blister—large enough to cover all the parts which are tender, or a little larger, must be applied; and hot cloths applied over it, as I directed in another place, for the purpose of hastening its drawing and increasing its effects.

I once had a case of acute inflammation of the liver which came very near ending in suppuration; and I will here notice it, in order to illustrate what can be done by perseverance under difficulties. After having used other means, I thought it necessary to apply a blister, and did so; but the insensibility of the skin, directly over the disease, was so great, that no effect was made, except around the margin. I cut the blister a little smaller, and reäpplied it; over which I had placed a poultice made with vinegar instead of water; in six hours it was again examined, and found to have drawn over all the space except a centre of about the dimensions of a small saucer, over the centre of the diseased part. Knowing that any delay would now defeat my purpose of causing absorption and making the inflammation terminate by resolution—in fact, the probabilities were that suppuration had already commenced—I at once resolved on a bolder course; and prepared a fold of cloth, large enough to cover the part that wouldn't blister, and covering all the other space with a tallowed rag, to prevent it from being acted on, saturated the first with strong nitric acid, [aquafortis,] and let it remain half an hour. On removing it I found the surface black and spongy, and then ordered the other dressings removed, and the whole implicated surface enveloped in a well-greased mush poultice. This succeeded. I had, the next day, the satisfaction of seeing all the surface covered with healthy matter or pus, which informed me that inflammatory action in deeper-seated parts had yielded, and that an abscess was prevented, and the danger of losing by death a very interesting young lady was now pretty well over. No further treatment was necessary in this case but to keep the bowels open with salts and cream of tartar, and to attend to the blister. I will here notify my readers, that when they have succeeded in blistering the surface over an internal inflammation after much difficulty, they may ex-

pect trouble with the blister itself; for the *mischief* seems to be transferred from within to the blistered surface, and often causes a degree of irritation which will fully test the patience and powers of endurance of the patient, and exhaust the skill of the physician or nurse. Full doses of opiates must be given, and the blister dressed thus: add four grains of morphine, or half an ounce of laudanum, to six ounces of mucilage, and a fine soft cloth—that which has been well worn is always best — saturated in this mixture and neatly applied to all the vesicated surface. This is to remain; now keep this wet by placing several folds of old cotton or linen cloth, which has been saturated with the emulsion, over it, and renew it often enough to prevent the first from becoming dry. If the heat and irritation be great after applying the first cloth as directed, you may pour a stream of *tepid* water on it, and continue the pouring until the patient ceases to complain; then proceed with the saturated cloths as before directed. I wish these directions remembered, as they apply to all irritable blisters, and will not be again repeated.

The above measures, if fully carried out, will, I think, always prevent inflammation from running into suppuration, or becoming chronic; but if they should be neglected, or fail to fully succeed, or if the case has first presented itself in the chronic form, then we must introduce some new remedies. In chronic inflammation of the liver the bowels are usually very torpid; this is partly owing to the bile, which is the natural purgative, not being secreted, or not being of the right kind; the principal objects, therefore, which we must have in view in the management of this disease are, to regulate the action of the bowels, and to restore or correct the secretion of the bile. The fever syrup, given in tablespoonful doses every four or six hours, and the following pill, taken between each dose, will answer both of these purposes: calomel, comp. ext. of colocynth, and castile soap, each 30 grains; make 18 pills.

Rigid attention must be paid to the diet during the cure of this disease; that is, nothing gross must be taken, nor any thing which the patient cannot readily digest. Sponging

the body once every day with cold water, and then having the surface rubbed with a coarse towel until the skin becomes red, will be found very beneficial, both in this and every other case, during convalescence from inflammatory or febrile diseases.

As soon as the patient can bear it, he should take exercise on horseback; don't ride out just for the sake of the ride, but devise some excuse, either of business or pleasure, so that the mind may be broken off from an everlasting brooding over the disease, and watching for every little pain or peculiar feeling, which often are really the result of this morbid anxiety acting through the nerves.

INFLAMMATION OF THE STOMACH—GASTRITIS.

Inflammation may be confined to the mucous membrane which lines the stomach, or it may involve all the structures which enter into the composition of this organ; and names have been given to the disease indicating the particular tissue principally affected; but as it is difficult to distinguish these varieties, and especially as it leads to no practical advantage—all being subject to the same treatment—we will not complicate the subject by drawing useless distinctions, but consider all as one disease.

Gastritis, like other inflammations, may be either acute or chronic; we will first consider

ACUTE GASTRITIS.

This is by no means common as an independent affection, though very frequently found associated with other diseases, of which it may be either an effect or a mere attendant, having its origin in the same cause. Few organs resist so firmly the ordinary direct causes of inflammation as the stomach, and few are so readily affected through the sympathies. The object of this provision is evident. An organ so important in its functions, and so much exposed to irritant influence from without, would be constantly suffering, and causing the system to suffer, if readily excited into inflammation by an excess of such influence; while, if undisturbed by inflammation, or morbid excitement in

other organs, it would continue to furnish, through the function of digestion, materials to the blood calculated to sustain the disease.

Symptoms.—In severe cases of acute gastritis there is usually a burning pain in the epigastrium, or pit of the stomach, with incessant nausea and vomiting, commencing with the attack, and continuing, with greater or less intensity, till near the close. The pain is increased by pressure from without, and by a deep inspiration, and is sometimes excruciating in the act of vomiting. The substances thrown up from the stomach are at first the food or chyme, and afterwards bile or mucus, and whatever may be swallowed, and are sometimes more or less deeply tinged with blood. There is occasionally considerable difficulty of deglutition, in consequence of spasm of the œsophagus or cardiac orifice. The thirst is intense, and the patient is constantly calling for cold water, although, if taken freely, it produces uneasiness and oppression by the distension of the stomach, and is often immediately rejected. The tongue is at first usually covered in the middle and posterior part with a whitish fur, while its tip and edges are red, and red papillæ are visible through the coating; but sometimes it is red, smooth, dryish, and without fur, from the commencement. The bowels are almost always constipated, unless they participate in the inflammation, in which case they are looser than in health. The patient lies on his back, is apt to be low-spirited, is restless and unable to sleep, and has a feeling of great debility, with an expression of countenance indicating anxiety and distress. The pulse is frequent and sometimes full, but usually small and corded; the respiration often short and hurried; the skin hot and dry; and the urine high-colored.

Should the disease now take a favorable turn, the pain and vomiting abate; the tongue becomes paler and moister, the pulse slower, fuller, and less corded, the skin cooler and softer; and sometimes a general moisture of the skin, or relaxation of the bowels, evinces that the crisis is passed. But should it advance unfavorably, the tongue, if before coated, becomes smooth, red, and dry, and towards the close

is occasionally covered, as well as the inside of the cheek, with a thrush-like exudation; the skin becomes cool and pale, and the pulse more frequent, feeble, and thread-like; the body emaciates rapidly; debility and restlessness increase; delirium frequently occurs; hiccough harasses the patient; active vomiting is succeeded by mere regurgitation; instead of mucus or bile, a black matter like coffee-grounds is sometimes ejected; the tenderness on pressure diminishes, and pain sometimes ceases entirely; the countenance sinks, and assumes a haggard aspect; and death occurs, preceded by cold extremities, a scarcely perceptible pulse, and other evidences of extreme exhaustion. The complete suspension of pain, without amelioration in other respects, is an unfavorable sign. In some rare instances, in the latter stage, the pain suddenly increases and becomes more diffused, and extreme tenderness upon pressure is felt over the whole abdomen, which swells from an accumulation of gas.

In milder forms of the disease, the symptoms above enumerated as characterizing the earlier stages, are experienced in a less degree. Sometimes, instead of severe pain, there is merely a feeling of oppression, weight, or constriction; instead of obstinate and incessant vomiting, merely a slight nausea, or a disposition to vomit whatever is taken. The pulse, too, in such cases, is usually more full and developed. Epigastric tenderness is very seldom absent. "Occasionally, even in severe gastritis, there is a want of all the characteristic symptoms; so that the first evidence of the nature of the complaint is that afforded by dissection. This is sometimes attributable to the fact that various secondary or sympathetic affections, such as severe headache or delirium, pains in the back or limbs, or irritation of some portion of the pulmonary apparatus, become so prominent as to act revulsively in relation to the gastric sensibilities, and thus to mask the real disease. When gastritis attends other diseases, it is peculiarly liable to be thus concealed, as in that form of the derangement of drunkards which immediately follows an occasional debauch, and in which it is highly important that it should be

recognized."—*Stokes.* The duration of acute gastritis is very variable. In violent cases, as from corrosive poison, death in some instances takes place in less than twenty-four hours; while in others, the disease continues from two to six weeks, and then, if not fatal, ends in a slow convalescence, or subsides into chronic gastritis of indefinite duration. Milder cases of the disease often yield speedily to appropriate treatment; but, if not taken in time, may run on for weeks, and at last assume the chronic form.

Causes.—Acute gastritis is rarely produced by those vicissitudes of temperature which are so often the cause of other inflammations. It most frequently results from caustic or irritant substances taken into the stomach. The corrosive mineral and acrid vegetable poisons often prove fatal in this way. Milder stimulants, such us alcoholic drinks, the stronger condiments, and even an excess of food, sometimes produce acute inflammation of the stomach, but rarely unless in cases where a strong predisposition exists. Large draughts of very cold water after fatiguing and exhausting exertion, when the body is heated and perspiring, are among the causes. Very severe cases sometimes result from the translation of acute gout or rheumatism. Andral relates a striking case of this kind, in which a predisposition to disease of the stomach appeared to be occasioned by distress of mind. But the state of convalescence from certain acute diseases, especially cholera, and the previous existence of chronic inflammation of the stomach, constitute the strongest predisposition. It is in these conditions that excess in eating and drinking most frequently brings on an attack of acute gastritis.

But this disease occurs much more frequently as an attendant upon other diseases than as an original or independent affection. It is peculiarly apt to occur in the course of fevers, particularly in bilious remittent and yellow fevers, and not unfrequently also attends the eruptive and inflammatory fevers. In some instances, it is very difficult, nay, impossible to decide whether the gastritis be the original or a secondary affection. The decision, however, is of the less consequence; as, in either case, a promi-

nent indication would be to combat the disease of the stomach; as this is at least one of the chief sources of danger.

General Treatment.—Should the gastritis have been caused by a corrosive or acrid poison, and the stomach not yet fully evacuated, the first object in the treatment should be to remove the offending matter, either by means of copious draughts of warm water, or other bland liquid, or, if these should be insufficient, by means of a gentle emetic of ipecacuanha accompanied with free dilution. At the same time, substances should be administered calculated to act as antidotes by neutralizing the poison; and, after the stomach has been thoroughly cleansed, castor oil or epsom salts should be given along with the antidote, in order to evacuate any portion of the poison which may have passed into the bowels. The inflammation is then to be treated as if it had arisen from other causes, attention being always paid to whatever peculiar condition of the system may have arisen from peculiar properties in the poison, and to the fact that, if great organic injury has been inflicted, the powers of the system are too much prostrated to admit of the employment of debilitating remedies.

In the early stage of gastritis, if the patient has not been previously debilitated, and the system is not under the influence of some powerfully depressing agent, as in typhus fever, and the case of certain poisons, blood should be taken freely from the arm; and, if the pulse and general strength do not fail under the loss, the bleeding should be repeated once and again, until a decided impression is made on the disease. The pulse and muscular strength of the patient are not to be taken as exclusive guides in acute gastritis. They both feel the depressing influence of the attending nausea, and will often rise under depletion, in consequence of the diminished force of the disease in which the nausea originates. Besides, a certain energy of stomach seems necessary to support the actions of the circulatory system; and when the functions of that organ are wholly suppressed by excessive inflammation, the heart, though irritated, contracts with comparatively little force.

Diminish the inflammation, and the heart resumes its power. Venesection is safe, so long as the pulse, as it not unfrequently does, rises and becomes more developed under the lancet.

As constipation is an almost uniform attendant on uncomplicated gastritis, cathartics would appear to be indicated; but medicines of any kind taken internally are apt to be rejected, or to aggravate the inflammation; and most authors recommend either their very sparing employment, or a total abstinence from them. Nevertheless, from five to fifteen grains of calomel may often be usefully given, in the earlier stage, after the due loss of blood. This cathartic is but slightly if at all irritant to the inflamed membrane, and is sometimes retained with the effect of calming the stomach, when other substances, even small quantities of cold water, are rejected. Besides, it operates favorably by unloading the portal veins through the secretion of bile, and thereby diminishing congestion in the stomach. The bowels should afterwards be kept open by the frequent use of injections. In some cases, when medicines are tolerated, a little castor oil or carbonate of magnesia, or other mild cathartic, may be administered with advantage; but, if found to disturb the stomach, they should not be persevered in. The effervescing draught will often operate favorably, by promoting perspiration and reducing fever; but this also will sometimes prove irritant, and must be relinquished. Opium, or one of the salts of morphia, may be given when the first violence of the inflammation has subsided. A full dose may be administered at bedtime, and repeated in an hour or two if it should not procure rest. Calomel, in minute doses, may often be usefully combined with the opium. Half a grain or a grain of opium, with a like quantity of calomel, in the form of pill, repeated every four hours, will generally be sufficient for the purpose. When the vomiting is obstinate, and easily excited, so that even these medicines cannot be retained, advantage will accrue from injections of laudanum with a solution of starch or flaxseed tea. Throughout the complaint, mustard baths, or

other measures for exciting action in the lower extremities, should be employed when these are pale and cold.

The patient should not be allowed to drink largely; but he will derive relief from occasionally swallowing a mouthful of very cold water, or from keeping ice in his mouth, and swallowing it as it dissolves. Few measures will be found more grateful than this, while it proves positively useful in the relief of the inflammation. Stokes recommends that small pieces of the ice should be swallowed undissolved, after they have remained in the mouth a short time, so as to round off the angles. Iced lemonade may sometimes be favorably substituted for pure water. In the early stages, no other nutriment should be allowed than a solution of gum-arabic, weak barley-water, or some other mucilaginous or farinaceous drink; and even these may be dispensed with at first; but in the more advanced stages, when the debility is great, and an absolute necessity exists for the support afforded by nourishment, fresh milk mixed with lime-water will be found both grateful and useful. These should be given in small quantities, frequently repeated, as from half an ounce to an ounce of each every hour. In a still more advanced stage, chicken-broth, plain cream, or ice-cream may be carefully administered. In convalescence, the utmost caution should be observed to guard the patient against imprudence in eating, as nothing would be more likely to occasion a relapse.

Local Treatment.—No one remedy in the treatment of acute gastritis is more important than leeches to the pit of the stomach. The most decided relief is often experienced from this remedy, in some instances even while the leeches are drawing. The principle upon which leeching operates with so much advantage is not obvious. Some refer it to revulsion, and the direction of the current of blood from the stomach to the surface. But in this way the leeches should prove equally useful applied to the sides or back, as these parts are nearer even than the epigastrium to the source whence the stomach receives its supply of blood. May not the result be ascribed to some undefined sympathy be-

tween the epigastrium and the gastric mucous membrane? In the intervals between the leechings, warm fomentations or light emollient poultices should be applied over the region of the stomach, unless found very oppressive by their weight. Care, however, must be taken that they do not produce too copious a flow of blood from the leech-bites. Cold applications, and even ice, have been recommended as preferable to warm fomentations; chloroform liniment may also be used with much advantage, and I have frequently seen the cold cloth, or "half-pack," have the most happy effect. In the advanced stages, decided benefit will sometimes accrue from blistering; and advantage may be taken of the raw surface thus obtained, to relieve nausea and vomiting, by sprinkling on the raw surface a grain or two of the acetate or sulphate of morphia.

It is scarcely necessary to state, that the above plan of treatment may be applied, in various degrees and with various modifications, according to the nature of the case, as well to the inflammation of the stomach which attends other diseases, as to idiopathic gastritis.

CHRONIC GASTRITIS.

There is no distinct line of division between this and the former variety of gastritis. The extremes could not be confounded; but of the numerous intermediate grades, it would often be difficult to decide which might belong to the one, and which to the other variety. If the attendant, however, observe the same gradation in the treatment which he finds in the character of the disease, no harm can result.

Symptoms.—When not the result of the acute form, chronic gastritis in general approaches so gradually, that it seldom attracts the serious attention of the patient, until it has existed a considerable time. The first symptoms are usually some uneasiness in the region of the stomach after eating, more or less derangement of the appetite, and a feeling of general discomfort during digestion, with occasional headache, and vague pains or soreness in the limbs as if from fatigue. Sometimes nausea and vomiting occur at the commencement. The symptoms gradually increase

in intensity and diversity; and the disease puts on a great variety of aspects, dependent on the degree, extent, stage, cause, and character of the inflammation, the tissue or part affected, the constitution and habits of the patient, and the almost infinite diversity of sympathetic derangements. In almost all cases, perhaps in all, there is more or less uneasiness about the pit of the stomach or epigastrium. This generally amounts to pain, which, however, is exceedingly variable, being sometimes acute, lancinating, or spasmodic, sometimes slight, dull, and little more than soreness. Frequently there is a sense of heat or burning, which sometimes extends up the œsophagus, or over the chest, particularly on the left side, and is hence called *heart-burn*. Instead of pain, there is often a feeling of fulness and distension, or of weight or constriction, or of gnawing at the epigastrium, which is for the most part also, though not invariably, sore when pressed. The uneasiness is sometimes general over the epigastric region, or even extends under the ribs on both sides, and under the sternum or breast-bone; but in other cases it is shifting, or confined to one spot; and this occasionally answers to the particular part of the stomach affected. Frequently, also, pain is felt in other places, as in various parts of the chest, in the shoulder and arm, and in the back immediately behind the region of the stomach. The sensation is seldom constant; but has exacerbations and remissions, or entirely intermits, and is generally worse immediately after eating, or during digestion. It sometimes commences at a certain period after a meal.

The appetite is variable in different cases, and sometimes in the same case. Occasionally it is little affected; and, in such cases, there is reason to think that the inflammation is very moderate, or confined to a comparatively small portion of the stomach. Very generally, however, it is deranged, for the most part diminished, sometimes nearly or quite lost, and occasionally craving. In the last case, though the patient may begin to take food eagerly, yet the disposition is apt to pass away after a small portion has been swallowed, and is even followed by a feeling of dis-

gust. Instead of a genuine appetite, there is often a sensation as of hollowness or sinking at the stomach, with a feeling of faintness, which leads to the desire for food, and is sometimes relieved by it. The same want of the system is, in some instances, expressed by a headache or dry cough, which ceases after a meal. The patient sometimes dreads food, from the remembrance of the uneasiness it has occasioned. The taste is often vitiated, and substances leave an impression of sourness in the mouth after being swallowed. There is usually thirst, and a desire for cold drinks, which, if moderately taken, afford relief; while hot and stimulating drinks increase the uneasiness. Sometimes, however, the thirst is not greater than in health.

Large quantities of gas are sometimes evolved in the stomach, which occasion frequent belching. The gas is in some instances inodorous, in others fetid and irritating. Eructations of sour and acrid liquids are not uncommon. Vomiting is also a frequent attendant. It occurs seldom at the commencement of the attack, but is apt to become more frequent, and, at length, in some cases, attains such a degree, that not a meal, and scarcely a mouthful of food, can be swallowed without being discharged. It is wonderful how long patients sometimes live, and even retain their flesh, who vomit apparently all their food. Portions, however, must remain and be digested. The matters vomited are food, bile, mucus, sour and acrid liquids, which seem to excoriate the throat in their passage, and, in some instances, blood mixed or unmixed, fresh or altered by the action of the gastric juice. Sometimes, especially in the latter stages, and when ulceration exists, a dark matter resembling coffee-grounds is discharged from the stomach, and is also found in the evacuations from the bowels. This is blood somewhat modified by an imperfect secretory effort of the vessels. The discharge of these various substances often affords so much relief to the patient, that he acquires the very injurious habit of throwing them up voluntarily. In some cases, large quantities of a glairy fluid like the uncoagulated white of eggs, or of the ordinary mucus of the stomach, or of a tasteless colorless liquid like saliva, are

discharged, often rather by a species of eructation than by vomiting.

Constipation almost invariably exists, unless in cases in which the inflammation extends to the bowels.

The tongue is, in some rare cases, little if at all affected; but generally it is either coated more or less with a whitish or yellowish fur, with the reddened papillæ projecting, or is red and smooth, or has the papillæ enlarged and reddened without other change. It is seldom so dry as in acute gastritis, but is often clammy or dryish, especially in the morning, or after sleep. In the advanced stages, it is occasionally covered with aphthæ, or a thrush-like exudation. This is supposed to indicate ulceration of the stomach, and is usually an unfavorable, though by no means necessarily a fatal sign.

The pulse is sometimes scarcely more frequent than in health, and may even be less so. Occasionally it is irregular and intermittent. Usually, however, it is somewhat increased in frequency and tension. In some instances, there is a slight febrile paroxysm after eating; and in the advanced stages, the pulse often becomes very frequent; and even hectic fever may set in. Except in this latter state, the skin is almost invariably dry, and sometimes even harsh, with a disposition to eruptive affections of various kinds, especially urticaria, [nettle-rash.] The soles of the feet, and the palms of the hands, are in some persons distressingly hot; while in others there is a disposition to coldness of the extremities.

The secretions are almost always more or less deranged. The saliva is not unfrequently sour, the bile scanty, superabundant, or deranged, and the urine variously disordered.

The nutritive process is differently affected in different cases. Sometimes the patient appears not to lose flesh for a considerable time after the commencement of the disease, and, in a few instances, retains his fulness till near the close. But usually there is great emaciation.

The sympathetic disorders of the nervous system are almost infinitely numerous and diversified. Among the more common may be enumerated headache, giddiness, per-

verted vision, buzzing or roaring in the ears, dyspnœa, a dry hard cough, palpitations, violent pulsations in the epigastrium, a general feeling of uneasiness, vague pains in the extremities, and great mental anxiety or dejection, with perverted feelings, and notions amounting sometimes to hypochondriasis.

The duration of the disease is usually considerable, not unfrequently for years. It seldom marches steadily forward, but is liable to frequent changes; the patient sometimes approaching to recovery and then relapsing, and going through this alternation several times before recovery or death. Under favorable circumstances of position, constitution, and treatment, the disease very generally terminates favorably, unless complicated; and the patient sometimes recovers from the most alarming symptoms. Even large ulcers heal. But death is not an unfrequent result. It is usually preceded by great emaciation and debility, sometimes by hectic fever; and the patient often sinks under a complication of disorders, originating in sympathy with the stomach, but constituting ultimately the chief source of danger. The fatal result is sometimes immediately produced by an attack of peritonitis, consequent upon the escape of the contents of the stomach, through an ulcerated opening, into the cavity of the abdomen. The ulcer having destroyed nearly the whole thickness of the coats, the remaining slender portion is ruptured by some mechanical violence, as by over-distension of the stomach, the act of vomiting, or by voluntary straining. The penetration, however, of the coats of the stomach is not necessarily fatal. The diseased surface contracts adhesions with that of some adjacent viscus, the body of which thus forms a floor for the ulcer. The liver, spleen, or pancreas may serve this useful purpose. Sometimes the stomach and colon become united, and communicate so that the contents of the former escape through the latter. These results, however, are more common in cancer of the stomach than in ulceration of the ordinary character.

It has been mentioned, that numerous varieties of chronic gastritis exist. Sometimes the symptoms are comparatively

mild from the commencement, and continue so through its whole course. In other cases, though mild in the beginning, and for a variable length of time afterwards, they gradually increase, until the case assumes a serious aspect. In others, again, they exhibit an alarming intensity almost from the outset. In a few instances, the complaint runs on in its mildest form for a long time, and then suddenly breaks out into fatal violence. Under such circumstances, there is reason to suppose that the inflammation may have been confined to a small portion of the stomach, but, ending in ulceration, exhibits at length evidences of great organic mischief. This condition may be suspected when vomiting of blood, or of matter like coffee-grounds, supervenes upon the ordinary symptoms of chronic gastritis. The inference, however, is by no means positive, as both these results may occur without any solution of continuity in the mucous membrane. Perforation of the stomach is another of those cases in which the course of the disease is very insidious. Every now and then a case occurs in which the patient, previously in tolerable health, or complaining occasionally of some stomachic uneasiness, is suddenly seized with severe pain, and dies with all the phenomena of peritonitis. Dissection reveals an ulcerated opening in the stomach. Here, an ulcer so small or so little sensitive as scarcely to have made itself felt, has opened a way through all the coats, and allowed the gastric contents to escape into the peritoneal cavity. Another variety of the disease is so peculiar as to merit a separate paragraph.

Under the name of *gastrorrhœa*, modern writers describe an affection, characterized by the copious discharge from the stomach of a glairy fluid, usually insipid and inodorous, bearing a close resemblance in appearance to the uncoagulated white of eggs, or of mucus in its ordinary form. The vomiting occurs most commonly in the morning, as if the fluid had collected in the stomach during sleep; but it may take place at any time; and a singular circumstance is, that the matter is often thrown off after eating, without a simultaneous discharge of the food. The vomiting is usually very easy—sometimes, in fact, little more than a species of

regurgitation. The disease may be considered as a sort of catarrh of the stomach. It is sometimes attended with the ordinary phenomena of chronic gastritis; but, in other cases, neither exhibits during life, nor leaves after death, evidences of inflammation. Still, like the similar affection of the nostrils and the bladder, it probably originates, even in the latter cases, in an inflammatory condition, or at least irritation of the mucous membrane, which has given way to the discharge, while the secreting vessels retain their new mode of acting. It is often a mild disease, but in some instances runs a long course, and at last ends fatally, especially in old persons.

Causes.—Chronic gastritis occasionally follows the acute; but, in the great majority of cases, it is an independent affection, resulting for the most part from long persisting or frequently repeated irritation. The abuse of alcoholic liquors, habitual excess in eating, the employment of indigestible food as ordinary diet, and the excessive use of medicines, are among the most frequent causes. Congestion of the portal circulation, and the sympathetic irritation arising from disease in other organs, especially in the liver and spleen, may also give rise to the complaint. It is a frequent attendant upon phthisis, especially in the latter stages; and the tuberculous diathesis communicates to it an extraordinary obstinacy when it arises from other causes. But no disease is so productive of chronic gastritis as dyspepsia; and the two affections are so frequently associated, that by some authors they are considered identical. This subject will be discussed under dyspepsia. It is sufficient here to say, that the chronic inflammation which so often accompanies or follows that complaint, may be ascribed in great measure to the constant irritation of the undigested, or badly digested, or chemically altered food, and of the acrid and otherwise disordered secretions which take the place of the healthy stomachic fluids, in consequence of the impaired energy of the organ.

Diagnosis.—The only complaints with which chronic gastritis is liable to be confounded, are cancerous and other organic affections of the stomach, gastralgia and analogous

nervous affections, and dyspepsia. For the diagnostic cha racters in each of these cases, the reader is referred to the several diseases mentioned.

Treatment.—The first and most important indication in the treatment of chronic gastritis is the removal of the cause. As the disease in most instances either arises from irritating ingesta, or is sustained by them, and in all instances is aggravated by this cause, it is indispensably necessary to subject the patient to strict regulations of diet. This, indeed, is often all that is necessary to effect a cure. But the same diet is not applicable to all conditions of the disease. It is necessary, in regulating it, to have reference to the stage and degree of the inflammation, and the state of the system. It must be borne in mind, that the organ inflamed is that through which the system is nourished, and that, although it might be desirable in reference to the organ alone to restrict the diet most rigidly, yet the general debility may be such as to present still stronger claims to observance. Besides, the stomach itself may be injured by extreme abstinence, where the system is calling for support. Such are the sympathies of this viscus with the remainder of the body, that the suffering arising from deficient nutriment in every part is reflected upon it with especial force, and the stomach may thus be irritated in the midst of starvation. In this state of sympathetic suffering, its secretions are deranged, and themselves become an additional source of irritation. Hence, there is sometimes danger from that extreme abstinence upon which some authors have insisted; and patients have rapidly improved under a nutritious diet, after a long and fruitless abstemiousness. No precise rule can be laid down for all circumstances, except that in every case the food allowed should be of the kind most easily digested; as indigestible food, whether highly nutritious or otherwise, acts as a powerful irritant to the stomach. When the inflammation borders on the acute, and a slight febrile action exists, with a loss of appetite, farinaceous or mucilaginous liquids, such as solutions of tapioca, sago, arrowroot, and gum-arabic, and decoction of barley, should be exclusively used. If the

disease be quite chronic, and without fever on the one hand, or debility on the other, a more nutritious diet may be used, consisting of stale bread, crackers, boiled rice, mush, and gruels, care being always taken that the solid substances should be thoroughly masticated. In cases of general debility, the diet may be improved by the addition of milk or fresh cream. In some instances, great advantage will accrue from restricting the patient to new milk or fresh cream exclusively. This is especially useful in the cases attended with obstinate vomiting. The milk may, under such circumstances, be usefully mixed with one-third, or one-half, or an equal bulk of lime-water. I have found few means so effectual in relieving this exceedingly unpleasant form of chronic gastritis as the exclusive use of such a diet. Patients who for weeks and months have scarcely been able to retain a meal, and who have been reduced to the lowest state of emaciation, have experienced an almost immediate change for the better under this treatment. A fresh raw egg swallowed whole, and nothing taken afterwards for some hours, will often arrest vomiting both in acute and chronic gastritis. As the symptoms improve, bread or crackers may be used with the milk and lime-water, and the latter ingredient may be gradually omitted. When the debility is considerable, a more nutritious animal diet sometimes becomes necessary. Oysters raw or roasted, soft-boiled eggs, animal jellies, the white flesh of poultry and wild fowl, mutton, venison, etc., may be used, the caution being always observed to select only those meats which are easily digested. Boiled meats will also in general be preferable to those cooked in other modes. Of course the diet will be varied in the same case according to the indications; and it will generally be proper, after persevering for a considerable time with a rigid antiphlogistic regimen, to allow a gradual improvement, as the patient is found to bear it. Attention should always be paid to the calls of the stomach; and when the patient perseveringly demands certain articles of food, even though they may seem improper, he should be indulged, cautiously

at first, and afterwards freely, should they be found, as they often will be, to agree well with the stomach.

Alcoholic drinks should in all cases be scrupulously avoided. Coffee and tea should also be avoided; at least, only black tea should be allowed, and that weak. The patient may drink infusion of cocoa, or sweetened milk and water, at breakfast and tea. On the whole, however, cold water is the best beverage. Whatever drink may be allowed, it should be taken in moderate quantities at a time, so as not to distend the stomach.

By the means above mentioned, without the aid of medicine, cures may often be effected; but it is necessary to persevere long, and to guard the patient against any premature relaxation of the dietetic plan. A single debauch, or indulgence for a short time in forbidden food, may undo the work of months.

Other remedies, however, will often prove useful as adjuvants. Should the local symptoms be severe and the pulse strong, blood may sometimes be taken from the epigastrium by leeches or cups. Leeches are to be preferred, as the pressure of the cups may prove hurtful to the stomach. It is usually better to take a small quantity of blood, and to repeat the operation occasionally, than to exhaust the patient by large numbers of leeches at once. Revulsion by means of small blisters over the stomach, frequently repeated, or of croton oil or tartar-emetic applied so as to pustulate, is often highly useful. Should the tartar-emetic, however, sicken the stomach, as it sometimes appears to do when externally applied, it should be omitted. Costiveness must be obviated by means of laxatives or cathartic enemata, [injections,] or both combined. The free use of medicines of any kind by the stomach is injurious; but enemata are of themselves scarcely sufficient to meet the indication to evacuate the upper as well as the lower bowels. The gentlest laxatives should be selected and sparingly used. Magnesia is one of the best, as it answers the purpose of an antacid, which is often wanted. Rhubarb, castor oil, and the seidlitz powder may also be employed.

The same end may often be advantageously accomplished by a laxative diet of bran bread, or rye mush, or of stewed fruits when these are found not to irritate the stomach. Attention should be paid to the skin. Frictions with the flesh-brush, the warm or hot bath, according to the degree of excitement, and flannel next the skin, are all useful. From three to five grains of Dover's powder at bed-time sometimes answer a good purpose by producing perspiration, as well as by enabling the patient to sleep. When there is great local suffering, with general restlessness, small doses of the acetate or sulphate of morphia may be given occasionally with advantage; but care is always requisite to avoid establishing an injurious habit, which the patient may have difficulty in breaking. The feet should be kept warm, if necessary, by rubefacient applications. Other diseases, whether functional or organic, and, in the female, disorder of the menstrual function, should be relieved by appropriate remedies; regard being always had to the probability of injuring the stomach by irritating medicines.

When the measures above detailed do not answer, especially when there is reason to suspect the existence of ulcers, recourse may be had to the alterative remedies, which prove so useful as local applications in similar affections of the mouth and fauces. Sub-nitrate of bismuth, the sulphates of iron, zinc, and copper, and the nitrate and oxide of silver, have all been usefully employed. The nitrate of silver has recently attracted considerable attention, and has been given in larger doses than were formerly thought advisable. From one-quarter of a grain to a grain is often administered two or three times a day without disadvantage. Cures in apparently desperate cases are sometimes obtained by nitrate of silver thus employed. I have repeatedly seen patients rescued by this remedy, for whom all other hope had been abandoned. It is generally advisable to combine the metallic salts with small doses of opium, or one of the salts of morphia.

Tonics in the advanced stages are sometimes useful, probably by giving to the vessels relaxed by the previous inflammation sufficient energy to take on a healthy action,

and resume their ordinary functions. The chalybeates and simple bitters should be preferred.

In *gastrorrhœa*, which is often rather a condition consequent upon previous inflammation than itself inflammatory, the treatment by the mineral alteratives above mentioned, and by tonics, is peculiarly applicable. Should symptoms of inflammation exist, they should be combated in the ordinary manner. Should they be absent, the treatment may be commenced by an emetic of ipecacuanha followed by a saline purgative, as epsom salts or seidlitz powder. The vegetable bitters, chalybeates, and mineral acids may be used; but most confidence is generally placed in the sub-nitrate of bismuth and nitrate of silver, the latter remedy being given in the dose of one-eighth to a quarter of a grain twice a day. Opium or some one of its preparations may be combined with the mineral salts, to relieve pain and check secretion. In such cases I have often derived great advantage from the following prescription: sul. morphia, two grains; turpentine, one drachm; mucilage, four ounces; a teaspoonful every two or three hours. The diet should generally be nutritious and digestible, consisting chiefly of farinaceous substances and animal food.

During the course of the treatment, in every form of chronic gastritis, efforts should be constantly made to prevent the mind from reäcting injuriously on the stomach, and at the same time to remove excitement from this organ by diffusing it equably over the whole system. Hence the importance of regular though not violent exercise, of relaxation from the cares and anxieties of business, and of agreeable mental occupation. A complete change of scene often proves serviceable. Excursions to different parts of the country, visits to the springs and to the sea-shore, sea voyages, and a residence or travelling abroad, often prove effectual, in cases to which much movement is not inapplicable, in bringing about a cure, or confirming convalescence.

INFLAMMATION OF THE BOWELS.

The intestinal tube is seldom if ever inflamed throughout its whole extent. Nor are the phenomena or symptoms

which different portions of it present, or the treatment they demand, in a state of inflammation, precisely the same. It is, therefore, convenient to divide the intestines into distinct sections, and to consider the affection in each of these separately. It is nevertheless true, that inflammation in any one section often spreads, to a greater or less extent, into that which adjoins it; and, in some instances, it would be impossible to decide which of the two is most prominently affected. I shall treat separately of inflammation of the upper portion or duodenum, of the middle portion, embracing chiefly the small bowels, viz., the jejunum and ileum, and of the lower portion or large intestines.

INFLAMMATION OF THE DUODENUM, OR DUODENITIS.

The duodenum is liable to the same modes of derangement as the stomach, and very frequently participates in its diseases. This might be expected, as its structure and functions so nearly resemble those of the stomach, that it has been not inappropriately called the *second stomach*. Thus, the various forms of gastric inflammation and irritation, cancer of the stomach, and even that condition of the organ denominated dyspepsia, extend in many instances to this portion of the bowels. Indeed, the duodenum itself is very seldom independently affected. The modifications produced either in the symptoms or treatment of stomachic disease by this complication are very few; and even where the duodenum may be supposed to be the exclusive seat of disorder, the phenomena and indications of cure are so similar to those presented by the analogous condition of the stomach, that it would be useless repetition to enter into minute detail, in relation to the morbid affections of the former structure. I shall, therefore, content myself with referring merely to the diagnostic symptoms, and to those points in the treatment which are in any degree peculiar. The circumstance in diseases of the duodenum which most deserves notice, is their peculiar tendency to produce functional disorder of the liver. Diseases exclusively gastric have the same tendency, but in an inferior degree. Broussais appears to have been the first to call attention decidedly

to this fact. Among the phenomena of hepatic or bilious disorder, accompanying affections of the duodenum, the most striking is a jaundiced state of the skin. The mode in which this is produced has been variously explained. It has been ascribed to a closure of the common duct of the liver, which gives passage to the bile and empties into this bowel, either by mucus, or a thickening of its coats consequent upon duodenal inflammation, and to the absorption of the bile thus impeded in its passage to the bowels. This explanation may possibly apply to some cases; but it is probably not true in general, and certainly not universally; for cases of duodenitis with jaundice occur, in which bile freely enters the bowels; and, in fatal cases, the duct has been repeatedly found upon dissection entirely unobstructed. A more probable explanation is founded upon the observation of Bichat, that between a secreting gland and the surface upon which its excretory duct opens, there is a sympathy by which a stimulus applied to the latter causes an increased action in the former. Thus the stimulus of food in the mouth causes an increased secretion of saliva. In like manner, the presence of the chyme in the duodenum stimulates the liver and pancreas, so that an increased supply of bile and pancreatic fluid, which are useful in the process of digestion, may be received where they are wanted. Irritation or inflammation of the duodenum should, therefore, produce irritation of the liver, which, according to its degree, may be attended either with an increase or diminution of the secretion of bile. In the former case, absorption takes place from the abundance thrown into the biliary passages and bowels; in the latter, the materials out of which the bile is formed accumulate in the blood; and, in both cases, the yellow coloring-matter is eliminated upon the surface and elsewhere. Again, in the dyspeptic or depressed state of the duodenum, it is incapable of receiving the ordinary impression from the chyme, and the ordinary stimulus is consequently not supplied to the hepatic secretory function. In this way also the secretion of bile is diminished, its materials accumulate in the blood, and jaundice results. But, notwithstanding the

occasional dependence of bilious affections upon disease of the duodenum, I believe that some authors have pushed this view much too far, and given to that viscus a pathological importance which it does not merit. Jaundice and other bilious symptoms may sometimes result from duodenal inflammation; but much more frequently they proceed originally from the liver, and the duodenum, if at all involved, is so either secondarily, or simultaneously from its exposure to the influence of the same causes.

Diagnosis.—Duodenitis, when it occurs, is almost always associated with inflammation of the stomach or of the bowels. Its existence may be suspected when, in addition to the ordinary symptoms of gastritis, there is deep-seated pain in the vicinity of the pylorus, or lower orifice of the stomach, extending below the stomach toward the left hypochondrium, or pain in the back about the first or second lumbar vertebra; when there is tenderness upon strong pressure in the space which lies immediately to the left of the right hypochondrium, without any evidence of enlarged or inflamed liver; and when the skin is more or less yellow, and the urine bilious, as in jaundice. If these symptoms should occur, without vomiting, great thirst, or pain and tenderness in the region of the stomach, indicating gastritis; without diarrhœa, pain in the lower bowels, or tympanites indicating enteritis; and without enlargement or tenderness of the liver indicating hepatitis, it may be inferred that the inflammation is confined chiefly, if not exclusively, to the duodenum. In acute duodenitis there is occasionally, along with the fever, a degree of coma dependent probably upon the hepatic derangement. In the chronic form of the complaint, a diagnostic symptom is the occurrence of pain two or three hours after a meal, arising from the passage of a portion of the contents of the stomach into the duodenum. The bowels in duodenitis are generally slow, but readily acted on by cathartics.

The causes of duodenitis are essentially the same as those of inflammation of the stomach. Such of them, however, as act through the liver are probably more influential in producing the former than the latter affection.

Treatment.—The treatment also is that adapted to gastritis. If there be any difference, it is chiefly in the freer use of mild cathartic medicines, such as the neutral salts, bitartrate of potassa, castor oil, senna, etc.; and when the liver is also involved, such remedies as have been directed when treating on hepatitis.

ENTERITIS, OR INFLAMMATION OF THE SMALL INTESTINES.

The name enteritis is, strictly speaking, applicable to inflammation of any portion of the bowels; yet, as this affection, in the upper and lower extremities of the intestinal tube, has received the designations of duodenitis and dysentery, and as the symptoms of these two complaints are in certain points strikingly peculiar, it becomes convenient to give a distinct name to inflammation of the intervening portion, and enteritis may perhaps, without impropriety, receive this more restricted meaning. It should be understood, that inflammation of the peritoneal coat of the bowels, as a distinct affection, though hitherto frequently denominated enteritis, is not here included under that term, as it clearly belongs to peritonitis. Enteritis, then, as employed in this work, signifies inflammation of the mucous membrane of the jejunum and ileum, extending frequently to a greater or less distance into the colon, and occasionally involving the other coats as a secondary result. The force of the disease is usually spent upon the ileum, the jejunum being less liable to inflammation than any other portion of the alimentary canal. The greater liability of the ileum to be affected depends, probably, on that arrangement by which the fluids, in their passage through the bowels, are somewhat impeded at the ileo-cæcal valve, and commencement of the ascending colon, and thus have the opportunity of exercising a more protracted irritant influence on this than upon the upper portion of the tube. As the inflammation may extend indefinitely into the colon, it is obvious that the phenomena of dysentery must often be mingled with those of the complaint under consideration; and cases occur, in which it would be impossible to decide to which affection they should be referred; yet, for the most part, the symptoms are sufficiently distinctive.

ACUTE ENTERITIS, OR INFLAMMATION IN THE SMALL BOWELS.

The complaint commonly begins with uneasiness in the bowels, followed after a time by occasional slight griping pains, which gradually become more frequent and severe. In some cases, however, the symptoms are violent from the commencement, and in others, again, very little pain is felt throughout. There is generally more or less tenderness upon pressure. The seat of the pain and tenderness is usually about the umbilicus, though it varies with the part inflamed, and is not unfrequently found more especially in the right iliac region.

Diarrhœa is a very frequent symptom. Discharges from the bowels are apt to follow attacks of griping pain, which they often mitigate; and several of these discharges may occur in the course of a day. The lower in the bowels the seat of inflammation, the more liable is it to be attended with diarrhœa, and the more frequent, as a general rule, are the evacuations. In cases where the bowels are not loose, they are for the most part readily and frequently moved by very small doses of mild cathartics. Sometimes the diarrhœa is suspended and again recurs, and this may happen several times during the course of the complaint. The stools are usually liquid, consisting of the increased serous exhalation of the intestines, mixed with fecal matter, bile, mucus, and undigested food, and sometimes tinged with blood. Occasionally, they are dark or green from the changed bile, or clay-colored from the absence of that fluid. There is occasionally some flatulent distension of the bowels; but this rarely amounts to tympanites, unless in children. When the inflammation depends upon obstruction in the bowels, or affects to any considerable extent the muscular and peritoneal coats, constipation instead of diarrhœa is experienced. Sometimes, indeed, the constipation, in inflammation involving the whole thickness of the bowel, is extremely obstinate, giving rise to vomiting and tympanitic distension, so as to resemble cases of obstruction, and sometimes to have been mistaken for them, with unfortunate consequences.

Febrile symptoms sometimes precede those of a local character, the sympathies and sensibility of the intestinal mucous membrane being such, that its inflammation may be felt by the system at large before making itself known by pain or increased secretion. In such cases there is general uneasiness, languor, and diminished appetite, with alternate chilliness and flushes of heat, for some days before the occurrence of pain. The fever when established is often remittent in character. The pulse is more or less excited and usually well developed, the skin dry, the urine scanty, and the tongue moist and somewhat furred. There is usually little or no headache or delirium.

The disease is often very mild, running its course in a few days, with little fever or pain, and but a slight diarrhœa. Even the severer cases, when properly treated, and not injuriously complicated, or subjected to the continued action of the cause, generally begin to decline in about a week. The result, however, is not always so favorable. The pains, instead of diminishing, are aggravated; the flatulent distension increases; the discharges become very offensive; inflammation ascends to the stomach, and vomiting occurs, with burning thirst, and epigastric tenderness; the liver sometimes becomes involved, and jaundice is added to the other symptoms; delirium sets in; the tongue becomes red and dry, and the pulse frequent and feeble; great emaciation takes place; and the patient either sinks at last, or recovers after a tedious and uncertain convalescence. In other cases, the peritoneal coat becomes inflamed, in consequence either of a direct extension of the disease from the mucous coat, or of an ulcerative perforation of the intestine, and the escape of its contents into the abdominal cavity. This event is marked by the occurrence of symptoms characteristic of peritonitis, and is too apt to lead to a fatal issue. Acute enteritis also frequently terminates in the chronic form.

Causes.—Among the causes of enteritis may be mentioned exposure to cold, especially when in a state of perspiration, retrocession of gout, rheumatism, and cutaneous eruptions, and the suppression of accustomed discharges. It is pro-

duced also by the direct contact of irritating substances, as by articles of food which have passed undigested through the stomach, acrid medicines especially drastic purges, poisons, hard insoluble bodies which have been swallowed, acrid secretions from the stomach, liver, pancreas and bowels themselves, worms, and by various causes which more or less completely obstruct the bowels, such as feculent or other solid accumulations, tumors, strangulation, etc. Enteritis is a frequent attendant upon other diseases, especially typhoid fever, the eruptive fevers, and consumption, and is one of the consequences of extensive burns, and may arise from the propagation downward of inflammation of the stomach. It attacks indiscriminately persons of both sexes and all ages, but is probably most common in children.

Diagnosis.—This complaint is distinguished from peritonitis by the want of that intense pain and tenderness, that excessive vomiting, that obstinate constipation and tympanites, and that contracted, frequent pulse, so common in the latter affection. When these symptoms occur during the progress of enteritis, there is reason to believe that the inflammation has attacked the peritoneal coat, and if they come on suddenly, that the bowel has been perforated. Colic is distinguished by the greater severity of the pain and its more decided spasmodic character, by the relief afforded by pressure, by the constipation which attends it, and by the frequent entire absence of fever. Another affection with which enteritis might be confounded is rheumatism of the abdominal parietes. But in this the pain and tenderness are more superficial; the patient suffers extremely from any attempt to move his body; there is no diarrhœa; and if any febrile action exist, it is much less than would attend an equal amount of local suffering from enteritis.

General Treatment.—If the disease is attended with constipation, a mild cathartic should be given; a tablespoonful of castor oil, with ten or fifteen drops of turpentine, will be a good prescription. Even when there is diarrhœa, laxatives are indicated in order to remove irritating secretions

or accumulations. For this purpose castor oil, with laudanum instead of turpentine, answers admirably well, which relieves pain without preventing the action of the medicine. Magnesia is preferable when there is much acid in the bowels, which may often be known by the odor and color of the stools. A mixture of magnesia and manna with fennel-seed tea forms a very good combination in such cases. Throughout the complaint, the bowels should be kept open if necessary by these laxatives, or by the neutral salts, so that there may be two or three stools daily. Emollient injections may be substituted if cathartics are found too irritating, and in any case may be used to assist them. The drastic purgatives should never be employed; and much smaller doses of the medicines mentioned will answer than under ordinary circumstances. It is also desirable to direct action towards the surface. When the skin is hot and dry, and the febrile action considerable, the neutral mixture or effervescing draught may be employed, combined, if it irritate the bowels, with a small portion of laudanum; in other cases, the powder of opium and ipecacuanha is preferable. This should be given at night, so as to procure rest. Calomel or the blue-mass should be added in small doses when there is deficiency or derangement of the hepatic function. The warm bath is also very useful, especially in the cases of children. In the advanced stages, after the subsidence of fever, and when the indication to check diarrhœa exists, the blue powder, [hyd. cum creta,] given in small and frequently repeated doses, will be found highly useful, particularly in children. But greater advantages have been derived from the use of the fever syrup than any other remedy; it must be given in small doses in sweet milk or mucilage, and often repeated. Great care is requisite in relation to the diet. In very severe cases, with much fever, a solution of gum-arabic will be sufficient. When something more nutritious is required, the farinaceous drinks, such as barley-water, rice-water, bread-water, and solutions of arrowroot, sago, and tapioca may be given. A little black tea and dry or toasted bread may be allowed to patients who crave them. In the

declining stages, weak chicken or mutton broth, without fat or vegetables, will sometimes be found useful.

Local Treatment.—The most efficient local measure is leeching immediately over the seat of tenderness. When leeches cannot be obtained, cups may be substituted. Many cases, however, require neither. Warm fomentations or emollient poultices sprinkled with chloroform liniment should be kept constantly applied for days together; with these laudanum or hops may be conjoined; and advantage will sometimes ensue from the addition of a little mustard, or other rubefacient. I have found much benefit from bruised garlic mixed with emollient cataplasms, especially in infantile cases with tympanitic abdomen. When the disease is obstinate, a blister should be applied over the abdomen.

When the stomach, liver, or brain becomes involved, treatment adapted to the affections of these organs respectively must be resorted to. In convalescence it is highly important to regulate the diet so as to avoid relapses, which probably proceed from errors in this respect more commonly than from any other cause. The patient should resist his frequently strong inclination to eat to excess. The lightest and most digestible articles of animal food should first be employed, along with easily digestible farinaceous substances, and a gradual advance made to more substantial aliment. Most of the fresh vegetables and fruits should be avoided until health is reëstablished. There will be much less danger from eating if a teaspoonful of the fever syrup is taken *after* each meal.

Occasionally, after the complete disappearance of all evidences of inflammation, a diarrhœa is left, dependent probably upon a relaxation of the secretory vessels or orifices, consequent on the previous excitement. In such cases, tonics and astringents become useful. (*See* DIARRHŒA.)

CHRONIC ENTERITIS.

This may follow the acute disease, or may be the direct result of the same causes, operating with less force, or upon a less susceptibility. Diarrhœa is even more characteristic

of chronic than of acute enteritis. Most cases of very obstinate diarrhœa are in fact nothing more than chronic inflammation of the bowels. The frequency, quantity, and quality of the stools vary exceedingly. Sometimes the number does not exceed two or three in twenty-four hours, sometimes the patient enjoys no rest from their recurrence; and this diversity is often found at different periods of the same case. The amount discharged is in some instances trifling, in others exceedingly abundant. In character the evacuations are not unlike those of acute enteritis. Occasionally portions of false membrane are discharged, and, in some rare instances, tubes of considerable length, obviously the result of a plastic inflammation, throwing out coagulable lymph upon the surface of the mucous membrane. Such cases are apt to be somewhat tedious, but may nevertheless do well in the end. In the advanced stages of the complaint, the evacuations are sometimes mingled with pus, which is an unfavorable sign. There is generally more or less pain; and strong pressure, or any sudden jar, as in coughing or jumping, occasions uneasiness. Sometimes the pain is severe, and, though relieved after each evacuation, returns so frequently as to keep the patient in almost constant distress. In many cases, it comes on at a certain period after eating, indicating the time at which the ingesta reach the spot affected. The abdomen is sometimes very flat, sometimes much distended, and even tympanitic. The appetite is often craving, and seldom wholly wanting, unless when the stomach participates in the disease. Occasionally the system scarcely evinces any other signs of sensibility to the local affection than a diminution of strength, and a more or less rapid emaciation. Generally, however, the pulse is somewhat increased in frequency, the tongue slightly furred, and the skin dry and harsh. In bad and protracted cases the tongue is sometimes red, smooth and dry, or aphthous, and the pulse very frequent. The spirits are usually depressed, sometimes greatly so, the patient being gloomy, morose, or irritable, dwelling on nothing but his own suffering, and seeing no hope before him. The mental disturbance amounts, in some instances,

to insanity; and incurable cases of this disease have had their origin in chronic enteritis. The stomach not unfrequently participates in the inflammation, and then all the symptoms of chronic gastritis are superadded. The duration of the disease is exceedingly variable. It may be cured within a week or two from the commencement of treatment, or may run on for years. When of long duration, it generally undergoes numerous vicissitudes, the patient being at one time much relieved or nearly well, and then again relapsing upon some new exposure, or even without obvious cause. Towards the close of fatal cases, hectic fever usually takes place, and the patient becomes much emaciated.

The causes are the same as those of acute enteritis. A tuberculous diathesis strongly predisposes to the complaint; and in very obstinate cases, which cannot be traced to cancerous disease of the bowels, or other obvious cause, there is great reason to apprehend that tubercles may have been developed in the mucous membrane. Chronic enteritis is a very common attendant upon the advanced stages of consumption.

Treatment.—The most important part of the treatment is probably the regulation of the diet. As the appetite is often unimpaired, and sometimes craving, the patient is constantly tempted to transgress, both in the quantity and quality of his food; and this is one of the chief causes of the occasional obstinacy of the complaint. The dietetic rules applicable here are so nearly the same with those already given under chronic gastritis, that it is unnecessary to repeat them. The particular kind of food which, on the whole, is most suitable, is milk; and patients will frequently get well without medicine if confined to that article exclusively. But, as it would thus be very irksome, it may be taken with stale bread or water-crackers, or boiled and thickened with wheat or rice flour, arrowroot, carrageen moss, etc. A decoction of Iceland moss with milk is sometimes useful, as well by its tonic as its nutritive properties. When the debility is considerable, it is necessary to have recourse to animal broths, etc. (*See* CHRONIC GASTRITIS.)

Occasional leeching may be resorted to with great advantage. Laxatives are required only when the bowels are slow, as sometimes, though rarely, happens; or when an accession of irritation arises from acrid accumulations. Opiates are almost always indicated. They prove useful by relieving pain, moderating secretion, and quieting that excessive action of the bowels which is itself injurious to the complaint. Opium may be used in the manner recommended for acute enteritis, or in small doses combined with the various remedies which may be given to meet other indications. I have found the camphorated tincture of opium [paregoric] an excellent preparation in this complaint. A teaspoonful of it given three or four times a day is, in many cases, the only medicine which will be required, in connection with a properly regulated diet. Acid in the bowels may be corrected by cretaceous preparations, as in the acute form. The comp. syrup of peach leaf (*see* DYSENTERY) may be used with great benefit in this disease. The nitrate and oxide of silver with opium have also been highly recommended, and the sulphate of zinc may be similarly employed. Oil of turpentine and copaiba sometimes prove useful through their alterative influence over the mucous membranes. They should be given in emulsion, and, like the other remedies, combined with an opiate. Tar-water is also sometimes useful. In some feeble cases, the simple bitters, sulphate of quinia, and the chalybeates are serviceable, by imparting a degree of tone to the ulcerated and relaxed mucous surface, which is necessary to the curative process.

In conjunction with the above measures, the warm or hot bath is highly important, the former being preferred when the temperature of the skin is above, the latter when it is at or below the healthy standard. In the latter case, the warm salt bath is an admirable remedy. It should be given daily, and may sometimes be advantageously repeated twice a day. Frictions to the surface are also useful. When the symptoms are somewhat acute, a large blister may be usefully applied over the whole abdomen; and a small blister near the affected part, frequently repeated, or

kept open by stimulant dressings, will often be found beneficial in ordinary cases. Pustulation with tartar emetic or croton oil may be tried when the complaint is obstinate. The patient should always wear flannel next the skin; and a broad flannel roller passed frequently round the abdomen is sometimes of service.

Moderate passive exercise, mental recreation, relaxation from business, sea-bathing, a journey into the country, a sea-voyage, and a residence abroad, may be resorted to, as recommended in chronic gastritis, when the condition of the disease, or the circumstances of the patient, do not forbid them.

SPLENITIS, OR INFLAMMATION OF THE SPLEEN.

This disease comes on with rigors, succeeded by heat, thirst, and other febrile symptoms; there is an anxiety and feeling of oppression or tightness about the epigastrium, with difficult respiration, often joined with a cough without expectoration. The patient complains also of external heat, tension, pains in the left side, which sometimes extend through the whole region of the abdomen, or shoot through the diaphragm, and into the left shoulder. The pains are increased on pressure, and are pulsatory, pungent, and burning in various degrees. The pulse on the left side is sometimes partially suppressed, often intermittent, weak, and not quick. There is lassitude and loss of strength, watchfulness, and sometimes delirium; dyspepsia, heartburn, vomiting of green bilious matter, and sometimes difficulty of voiding urine, from an affection of the kidney or bladder; swelling in the region affected, representing the form of the spleen; faintings, and bleeding from the nose: but the most remarkable symptom which attends, is the bloody vomiting, which most authors have considered as peculiar, and have designated by various names. By the ancients it was termed atra bilis. At the commencement, the intestines are rather confined, but they soon become relaxed, and emit substances somewhat colored by black blood.

Like the liver, the spleen is often attacked with chronic inflammation, and in time becomes enlarged and indu-

rated. Sometimes suppuration ensues, and forms an abscess.

The causes of the disease are most generally the same with those of other inflammatory diseases; but enlargements of the spleen are frequently the consequence of long-continued intermittents; and these, as well as indurations of the liver, are called ague-cakes. They arise, no doubt, from too great a determination of blood to these viscera during the several attacks of the cold fits.

With respect to the prognosis in splenitis, it need only be observed, that, like other inflammations, it may terminate either in resolution, suppuration, or scirrhus. Sometimes it is carried off by a vomiting of dark-colored matter, resembling coffee-grounds; sometimes by a diarrhœa, and sometimes by a hemorrhage from the hemorrhoidal vessels. The vomiting of grumous matter is, under common circumstances, to be considered a favorable and critical evacuation, yet it sometimes proceeds to a fatal excess. Where splenitis terminates in suppuration, and the contents of the abscess are evacuated in the cavity of the abdomen, the event may prove fatal; but simple enlargement of the spleen often continues many years without much annoyance or danger.

The general treatment of inflammation of the spleen should be the same as that recommended for the same grade of inflammation of the liver—to which I refer the reader—viz.: the fever syrup; the mild purgative pill, assisted by salts or seidlitz powder; chloroform liniment, poultices, etc. But there is one remedy which I have found to exert great power over this disease, which has not been mentioned, especially in cases of enlargement; that is, full doses of chloride of sodium or common table-salt. In order that it may have its full effect, it should be given in the morning, when the stomach is empty. My manner is to prescribe a full tablespoonful dissolved in a glass of cold water, to be taken every morning, fasting. If there be foulness of the stomach, it will act as a vomit, but it rarely does so after the first morning. I have cured many old cases of enlargement of the spleen by this remedy alone; but it is

better to give a tablespoonful of the fever syrup after each meal, in order to improve the general health. If the case proves stubborn, a blister over the enlargement should be applied, and repeated until the disease yields.

NEPHRITIS, OR INFLAMMATION OF THE KIDNEYS.

Nephritis, properly considered, appears to be of two kinds: the one arising from the general causes of inflammation, and being seated principally in the external membrane of the kidney; the other occasioned by the stimulus of gravel or a stone in the pelvis of it, and the inflammation occupying the interior parts. It is, however, only the first of these that I mean here to investigate; the other will be noticed under the head of Calculus.

This species of inflammation may be distinguished from the colic, by the pain being seated very far back, and by the urine being of a deep-red color, voided frequently, and in small quantity at a time; and it may be known from rheumatism, as in nephritis the pain is not much increased by the motion of the body.

It is to be distinguished from a calculus in the kidney or ureter, by the symptoms of fever accompanying or immediately following the attack of pain, and these continuing without any remarkable intermission; whereas, in a calculus of the kidney or ureter, they do not occur until a considerable time after violent pain has been felt.

Nephritis is to be distinguished from lumbago by the seat of the complaint, discovered upon pressure; by the dysuria and micturition, by its being frequently attended with vomiting, and by the pain extending along the course of the ureter, and not being much increased on motion, or by an erect posture.

The causes which give rise to this species of nephritis are, external contusions; strains of the back, acrids conveyed to the kidneys in the course of the circulation, violent and severe exercise, either in riding or walking, exposure to cold, and sand or stone in the kidney. Intemperance is the most fruitful source of the disease, and the

use of medicines which strongly stimulate the kidneys is also a frequent cause.

An inflammation of the kidney is attended with a sharp pain on the affected side, extending along the course of the ureter; and there is a frequent desire to make urine, with much difficulty in passing it; the bowels are costive; the skin dry and hot; the patient feels great uneasiness when he endeavors to walk or sit upright; he lies with most ease on the affected side, and is incommoded with nausea and vomiting, and there are often colic pains.

In forming an opinion as to the event, we are to draw our conclusion from the severity of the symptoms, and from the quantity and appearance of the urine which is voided. When the disease is protracted beyond the seventh or eighth day, and the patient feels an obtuse pain in the part, has frequent returns of chilliness and shiverings, there is reason to apprehend that matter is forming in the kidney, and that suppuration will ensue. Remission of pain, fever, and tension, followed by a copious secretion of high-colored mucous urine, universal diaphoresis, or a flow of blood from the hemorrhoidal veins, are favorable symptoms.

The terminations of nephritis are of the same nature as other inflammations. In slight and favorable cases, resolution may be obtained; but where the disease has continued with considerable violence for upwards of a week, suppuration may be apprehended. It may happen, however, that when the disease has been kept down by proper remedies, resolution may take place much later than seven days. It is marked by the disappearance of the fever and all the symptoms. Suppuration is marked by a remission of the pain, with rigors, throbbing, and hectic fever; in some cases, pus is discharged with the urine.

Nephritis has been known to terminate in gangrene; but this is very rare. The occurrence is characterized by a sudden cessation of the pain after it had long resisted every remedy; with sinking of the pulse, cold sweats, etc., as in other cases of gangrene.

Another termination of the disease is scirrhus, or enlarge-

ment and hardening of the kidney. Sometimes nephritis gives rise to gravel complaints, probably from extravasated blood, or lumps forming a nucleus.

In the cure of nephritis our chief reliance is to be placed on local remedies, such as dry-cupping or leeching over the region of the kidneys, assisted by fomentations, chloroform liniment, the use of a warm bath, and emollient clysters, etc.

After leeching, etc., we may advise flannel cloths wrung out of a warm decoction of emollient herbs, or a bladder filled with warm water, to be kept constantly applied over the part which is painful; and, by way of internal fomentation, an emollient clyster may frequently be injected. The patient is at the same time to be directed to drink plentifully of mild diluents, such as barley-water, thin gruel, whey, linseed or marshmallow tea, etc.

The intestines are to be emptied by gentle aperients, employed as frequently as the occasion may require, in addition to emollient clysters, as constipation ought carefully to be guarded against.

Should these means have been adopted without affording relief to the patient, he ought then to be put frequently into a warm bath, continuing him in it for about fifteen minutes each time. The remedy will produce a powerful determination to the surface of the body, and greatly increase the action of the cutaneous exhalants.

Mild diaphoretics, such as wild sage or balm tea, combined with sub-nauseating doses of tartarized antimony, will at the same time be proper.

Opiates may be used occasionally to soothe pain, and may be added to the clysters.

In nephritis the application of blisters would be improper. They are apt to affect the urinary organs, and to occasion much irritation, and would consequently increase the inflammation.

It has been mentioned that a difficulty of making water is one of the symptoms attendant on this disease: to obviate it, some practitioners give heating diuretics, such as turpentine, balsams, etc. The practice seems very im-

proper, and ought not to be followed, as it will be more advisable to apply warm fomentations over the region of the bladder and kidney, to eject emollient clysters with an addition of opium, and to make the patient drink frequently of warm diluents.

A decoction of the leaves of the peach tree, (*Amygdala Persica*, Linn.,) drunk in the quantity of a pint a day, has been found a very useful remedy in many cases of nephritis.

When the urine deposits a quantity of muco-purulent matter, showing that the inflammation has terminated in a suppuration, or that an ulcer has already formed in the kidney, the balsams and the turpentine may be used with advantage; the best I have tried is fat pine chopped up and put in whiskey.

One of the best medicines, however, with which I am acquainted, in such cases, is the uva ursi, which may be given in doses of half a drachm, or a drachm, three times a day. I have tried it in many instances, and in general with a happy effect.

Where an inflammation of the kidney has arisen from the stimulus of a stone or large piece of gravel lodged there, we should have recourse to the exhibition of anodynes and opiates in considerable doses, both by the mouth and by clyster, together with the other means advised under these particular heads.

In renal hemorrhage, as well as in most other internal hemorrhages, alum as an astringent, and the acetate of lead and digitalis as sedatives, are the remedies chiefly to be depended upon.

In nephritis every kind of food which is of a stimulating nature ought carefully to be avoided, and such only as is lenient and nutritive should be used, as every thing which is heating or acrid proves a stimulus to the kidneys; even the fever syrup often causes increased distress in passing urine, and has not been prescribed as suitable in this disease. Emollients and thin liquors should be drunk plentifully, and the patient should take frequent small draughts of them notwithstanding the vomiting, as nothing so safely abates the inflammation, after proper evacuation, as copious dilution.

Those who are liable to frequent returns of the disease, or to obstructions in the kidneys, ought carefully to avoid getting wet in the feet; as likewise all exposures to cold; they ought to lie on a mattress in preference to a feather-bed; their exercise should be moderate, and they should use no kind of wine or spirits.

CYSTITIS, OR INFLAMMATION OF THE BLADDER.

Tension and pain over the pubes, with a frequent desire of making water, difficulty in voiding it, or a total suppression, together with tenesmus and fever, mark this disease.

It is seldom a primary affection, but arises in consequence of inflammation in the neighboring parts. It is sometimes, however, occasioned by a suppression of urine and consequent over-distention of the bladder, or by a stone of considerable size lodged in it.

The treatment advised in nephritis, to which I beg leave to refer the reader, will be proper here, except that we should not give liquids in great quantities, lest we distend the bladder beyond what it is capable of bearing.

In consequence of previous inflammation from some exciting cause, the mucous membrane of the bladder now and then becomes thickened, indurated, or ulcerated; and a considerable quantity of mucus mixed with pus passes off with the urine, giving to it the appearance of whey, and now and then blood is discharged.

In the treatment of such cases, we are to prevent any collection of fæces in the rectum by means of some cooling laxative taken from time to time; to abate pain by small doses of opium, and to inject the bladder two or three times a day with warm water, or some emollient decoction, by means of an elastic gum catheter.

PERITONITIS, OR PERITONEAL INFLAMMATION.

As the peritoneum is a highly vascular and sensitive membrane, forming a covering for all the contents of the abdomen and pelvis, it is subject to many causes of inflammation, which is apt to assume a very active form, and requires to be promptly treated.

ACUTE PERITONITIS.

Symptoms, Course, etc.—A chill is sometimes the first symptom of peritonitis; but perhaps more frequently the disease begins with pain; and occasionally the occurrence of the two phenomena is simultaneous. The pain is sharp and very severe, and usually commences in the lower part of the abdomen, in the hypogastric or one of the iliac regions, whence it gradually extends over the whole cavity. Sometimes it is changeable, occurring now in one spot and then in another, and not unfrequently is attended with a sense of heat or burning. The abdomen is always tender to the touch. The slightest pressure by the hand occasions exquisite pain, and whatever gives rise to contraction of the abdominal muscles has the same effect. Hence the patient suffers much from vomiting, the act of defecation, the discharge of urine, and straining of all kinds. A deep inspiration is often very painful. Movements of the body in or out of bed are also painful; and even the weight of the bedclothes is often insupportable. Hence the patient usually lies motionless upon his back, with his knees drawn up, so as at once to relax the abdominal muscles, and take off the weight of the coverings. Another object of the supine position appears to be, to obviate in some degree the pressure of the bowels upon the parietal peritoneum. But this posture is not so universal as might be inferred from the descriptions of most medical writers. The author recollects that, in one of the worst cases of peritoneal inflammation he ever witnessed, the favorite position of the patient was upon his left side, with the knees so much drawn up as to be almost in contact with the abdomen. Most frequently the tenderness is general, but in some instances is greatest in particular spots, and in others is confined altogether to one spot; indicating, in the latter case, the local existence of the inflammation. From near the commencement there is generally a feeling of hardness, tension, and elasticity in the abdominal parietes; and very soon a tumefaction begins, which increases with the progress of the complaint.

This disease presents various diversities of form, and is sometimes entirely *local*, affecting some one portion of the peritoneum only; and this is apt to be the case when the disease proceeds from a local cause, such as mechanical violence, or the inflammation of an invested organ. In such cases it frequently happens that, though the inflammation is not propagated to any great extent continuously, it affects the portion of membrane opposed to and in contact with that inflamed. The inflammation is thus more likely to be confined to one spot when a fixed than when a movable organ is affected. Any part of the abdomen where there is peritoneum may be the seat of the affection. It is scarcely necessary to say, that in these cases all the symptoms, both local and constitutional, are less violent than in general peritonitis. The local character of the affection is marked by the limited extent of the pain and tenderness, though it must be confessed that, in some instances, it would be very difficult to establish a certain diagnosis. The symptoms are much modified by the position of the inflamed membrane, and by the organ which it may invest. Thus, when the inflammation occupies the peritoneal covering of the *liver*, it not unfrequently happens that the skin, eyes, and tongue are more or less yellow, in consequence of an extension of irritation into the substance of the organ. Great epigastric pain and tenderness, with severe constitutional symptoms, mark the peritoneal inflammation of the *stomach;* obstinate constipation, with a lower seat of pain, that of the *bowels;* painful irritation with tenderness in the hypogastric region, that of the *bladder*. The *omentum* may be separately inflamed, in which case the pain extends over the front of the abdomen, and effusion into the folds of the membrane may occasion circumscribed swellings, perceptible to the touch, and liable to be mistaken for enlarged spleen, or ovaries, or scirrhous tumors of different portions of the bowels. Andral mentions, as characteristic of *pelvic* peritonitis, pain above and behind the pubes, and extending backwards towards the loins, tenderness in the hypogastrium, slight fever, sweats, and the formation of tumors in the cavity, which press on the

neighboring organs, as the rectum, vagina, and bladder, materially interfering with their functions. Another frequent seat of partial peritonitis is the *right iliac region*. This, however, is almost always secondary, depending either upon the propagation of inflammation from the exterior cellular tissue, or from the cæcum or appendix, or upon the direct irritation of matters which have escaped from these portions of the alimentary canal by ulceration. It is marked by great tenderness and tumefaction over the head of the colon, and by obstinate constipation, and frequently terminates in an abscess, which makes its way to the surface, either anteriorly, or in the lumbar region. Other instances of local peritonitis are those in which the inflammation depends upon strangulation of the bowel, whether from hernia, intussusceptio, or other cause. In these cases, the symptoms of inflammation are always preceded by those of obstruction in its earlier stages, and subsequently associated with those of the same affection in its advanced stages, such as almost insuperable constipation, and vomiting of stercoraceous matter. (*See* OBSTRUCTION OF THE BOWELS.) Partial inflammation sometimes becomes general, and may thus prove very dangerous; but when confined to its original seat, it generally yields to proper treatment, unless complicated with some other more serious affection. As in the general disease, it occasionally gives rise to collections of pus, which is retained by adhesions between opposite surfaces of the membrane, and makes its way by ulceration either to the surface of the body, or into some one of the hollow viscera, occasionally producing, in its passage, much destruction of the organs with which it may come in contact.

Though for the most part an exceedingly painful disease, peritonitis sometimes comes on very insidiously, with little pain, and no great degree of tenderness, and runs its whole course, even to a fatal termination, without being suspected. This form of the disease is most apt to occur in persons of feeble health, and as a complication of other acute diseases, which serve to mask it.

Another modification of peritonitis is that resulting from the *perforation of a hollow viscus* or cavity, and the escape of its contents into the peritoneal sac. The inflammation is in this case most frequently general, though it may also be local.

Puerperal peritonitis is still another variety of this affection. It attacks women in child-bed, usually within three or four days after delivery, and sometimes within twenty-four hours. The pain sometimes comes on gradually and almost insensibly, sometimes suddenly and with severity, and in many cases is subject to exacerbations, resembling after-pains, with which it has often been confounded. It almost always commences in the hypogastric and lumbar regions, and, after the whole abdomen has become involved, is apt to be felt most severely in those parts. The tenderness on pressure is also at first confined to the region of the uterus. The lochia are diminished or suppressed; the mammæ become flaccid; and the secretion of milk either is not established, or is suspended if it had commenced. The abdomen is soft and flaccid at first, and, though it ultimately swells and becomes tympanitic, the parietes have none of that elastic tension, which is found in ordinary peritonitis, probably owing to their great distention in advanced pregnancy. The effused liquid is often copious, so that fluctuation in the abdomen is readily perceived. It is unnecessary to repeat an account of the general symptoms, which are essentially the same as those of ordinary peritonitis, though usually more severe. The pulse is more frequent, the respiration more hurried, the countenance more deeply affected, the prostration of strength greater, and the march of the disease more rapid and fatal. Severe pain in the head, vertigo, and delirium are more frequent, and cough is a common attendant of the puerperal affection. Death, which in the severe cases occurs in the course of a few days, and sometimes in less than twenty-four hours, is preceded by symptoms of great prostration; an extremely rapid and feeble pulse, cold skin, a brown and dry tongue, sordes about the teeth, tympanitic abdomen, and discharges

of black or dark-green matter by vomiting and stool. There is reason to believe that puerperal peritonitis is sometimes a secondary affection, in the same manner as erysipelas, being dependent upon or at least associated with a malignant febrile state of system, of which one of the characters is a depraved condition of the blood. In such cases, the general actions are feeble almost from the commencement, and the state of the system is similar to that which occurs in malignant typhus. This form of the disease, the only one to which the name of puerperal fever can be attached with propriety, is most apt to result from epidemic influence.

Peritonitis is always a dangerous disease; but when it occurs in a person of good constitution, and without complication, generally yields to early and efficient treatment. That form of it which depends on perforation is the most fatal. Next, perhaps, in degree of danger, is the puerperal peritonitis. The inflammation is least dangerous when it is partial, and, as a general rule, when it results from external injury.

Causes.—Peritonitis may arise from the ordinary causes of inflammation, such as vicissitudes of temperature, excessive use of stimulating food or drink, suppression of habitual discharges whether healthy or morbid, retrocession of cutaneous eruptions, and translation of gout and rheumatism. It is, however, more frequently the result of local violence, as of blows, falls, and bruises of all sorts, and of wounds penetrating the peritoneal cavity, including various surgical operations, among which may be mentioned that for strangulated hernia and for tapping, and the Cæsarian section.

Sometimes it occurs secondarily to other diseases, especially to inflammation of the organs which receive a complete or partial covering from the peritoneum. Inflammation of the womb, whether occurring from violence to that organ, or injury received in the process of parturition, is said frequently to extend to the peritoneal membrane. The disease is an ordinary result of strangulation of the bowel, both internal and external, when not relieved. Among the

most frequent causes of it is perforation of the different hollow viscera of the abdomen, or of morbid cavities, allowing the escape of their contents into the peritoneal sac. This perforation may be produced by ulceration, by mortification, and the separation of sloughs, or by mechanical rupture depending upon an extraordinary distending force within the cavities, or weakening of their parietes. Thus, perforation of the stomach, bowels, gall-bladder, biliary ducts, urinary bladder, kidneys, and ureters; the opening of abscesses in the substance of the organs, or in the cellular tissue without the peritoneum; the discharge of tubercles; the rupture of distended cysts or of aneurisms, may all occasion peritonitis. This perforation of the alimentary canal is most frequent in the course of typhoid fever and of phthisis, in both of which affections ulceration of the mucous membrane of the bowels is very common. It is also not unfrequently produced by foreign bodies lodged in some portion of the canal, especially in the cæcum and appendix, where they occasion inflammation, ulceration, and ultimately perforation of the coats of the bowel. Peritonitis sometimes comes on in the course of other diseases, particularly those of a febrile character, without any assignable cause, imitating, in this respect, the inflammation of various other parts or organs.

Of the variety of peritonitis denominated puerperal, the cause is probably in many instances a propagation of inflammation of the substance of the uterus, or of its veins or absorbents, to the peritoneal covering, or the direct participation of that covering in violence done to the organ. The disease may also arise from irregularities of diet, vicissitudes of the weather, etc., as any other inflammation. But very often also it arises from a peculiar epidemic influence, or, as some believe, from contagion; and thus originating, assumes not unfrequently its most malignant form. Of this character is the puerperal peritonitis of hospitals and lying-in establishments, which has often proved so fatal, and so little under the control of remedies. It has been asserted that peritonitis in the male has sometimes also occurred epidemically.

Diagnosis.—When the disease is well developed, and attended with the usual symptoms, without complication, there can be little difficulty in its diagnosis. From *colic* of all kinds it may be distinguished by the great tenderness upon pressure, the more persistent and less paroxysmal pain, and the almost constant supine position of the patient; from *mucous gastritis and enteritis* by the sharper pain and greater tenderness, the elastic tension of the abdomen, the supine position, the greater tendency to constipation, the small and very frequent pulse, the sunken and anxious countenance, and generally the deeper impression upon the constitution; from *inflammation of the muscular coat of the bowels*, by the more decided colicky symptoms of this affection in its earlier stages, its excessively obstinate constipation, and the fecal vomiting which attends its close; from *inflammation of the liver*, *bladder*, and other parts more or less invested by the peritoneum, by the absence, in these affections, of the symptoms which characterize peritonitis, while, if the membrane is inflamed, the acute pain, tenderness, abdominal tension, position, pain upon movement, etc., serve to indicate the fact; from *rheumatism of the abdominal muscles*, which bears to it the closest local resemblance, by the vomiting, the febrile symptoms, the peculiar expression of the face, and the difference in the pain which attends motion in the two cases, the pain in rheumatism being much severer from voluntary movements, which call the muscles into contraction, than from passive movement, while both occasion severe suffering in peritonitis. The distinction between the inflammation of the peritoneal investment of an organ and the substance of the organ itself, is often rendered difficult by the fact, that the functions of the organ are almost always more or less deranged, when the investing membrane only is inflamed; and, in fact, the two affections are often simultaneous; but an accurate diagnosis is of less consequence, as the treatment required by the peritoneal inflammation would in general involve that required by the inflamed organ, and, when the symptoms are violent, and the diagnosis doubtful, the measures required by the more dangerous affection should be adopted.

There is sometimes danger of confounding with peritonitis a *peculiar nervous affection of the contents of the abdomen and pelvis*, occurring especially in females. This is often attended with severe pain, tenderness, tumefaction, vomiting, and frequent pulse. But the pain is less constant; and, though aggravated by slight pressure, is sometimes alleviated when the pressure is strong. It is, moreover, often quite paroxysmal. The patient is liable to various nervous derangements of an hysterical character; and is able and disposed to change position in bed. The pulse and countenance are less disturbed; the urine, instead of being scanty, is usually copious and pellucid; and not unfrequently pressure upon the spine, by the suffering it occasions, at once discloses the nature of the disorder. In all cases of abdominal disease, the friction sound under auscultation may be considered, when it occurs, as a certain sign of peritonitis; though it does not always attend this disease.

Treatment.—You must recollect that this is a formidable disease, and must be vigorously met by proper remedies, or the patient will be lost. The bowels must be freely moved, and there is nothing better for this purpose than castor oil and turpentine; a tablespoonful of oil with twenty drops of turpentine should be given, and repeated in two or three hours if the bowels are not freely moved. If the patient cannot take oil, salts or senna may be given instead. While this is being done, a large poultice freely sprinkled with chloroform liniment should be applied, or cloths wrung out of hot water will do about as well as the poultice, and are less trouble and less apt to annoy the patient; they should be frequently renewed, each time rubbing the surface with the liniment, or with camphor and laudanum, or turpentine and spirits of hartshorn, or with turpentine alone. As soon as the bowels are moved, a full dose of opium should be given, and repeated often enough to keep the patient under its influence. I usually commence by giving two grains of opium, or one of morphine, and then give Dover's powder in doses of two or three grains every hour; but if this vomits, paregoric or Bateman's drops may be used instead; from half to a full tablespoonful of these may be given every

hour or two hours, in some mild tea or in cold water. Recollect that the pain must be allayed, and as much opium, or its preparations, must be given as will do this, irrespective of the quantity: for what would barely do this in one case might be a dangerous dose in another case, so that it is best to begin with a reasonable dose and repeat it at short intervals until the proper effect is obtained, and then continue it in the quantity that has been found to be necessary. I have before given the signs by which it may be known when the system is fully brought under the influence of opium; but in this case the criterion is to give it until the patient becomes easy. If the poultice and liniment should fail to remove the tenderness of the abdomen, you may resort to the use of warm water continuously poured upon the naked abdomen; this is a powerful remedy, and will succeed when all others appear to fail; but it must be done perseveringly in order to prove effectual. I was once in attendance upon a lady who had peritonitis in a most violent degree; her abdomen had enlarged to the dimensions of pregnancy at the full term, she was perfectly unconscious, and, to all appearance, near death; in conjunction with another physician, warm water poured upon the abdomen was resolved on, and it was continued without intermission for about *six hours* before perceptible amendment was discovered; she then seemed to awake as from a sleep, and the disease, in all its phases, gradually gave way. But the same effect can generally be produced by an apparently very different measure, viz.: by cold water applied by means of the wet sheet; but, though seemingly so different, these means operate upon the same principle, viz.: they both reduce the heat, relax spasm, and produce a revulsion to the surface. If cold is resorted to, it must be managed right, in order to be beneficial: a sheet should be folded several times and then saturated with cold water and laid on the abdomen, or wrapped entirely round the body; a dry blanket must be spread over this, and hot rocks or bricks placed to the feet and to the knees; the hands should also be laid upon hot rocks or bottles of hot water. When reäction takes place, if the patient becomes restless, the

sheet must be wet again, and this should be repeated until quiet and ease are obtained, and the patient falls into a pleasant slumber and gently perspires; the end is now gained, and nothing further should be done until symptoms of returning excitement and restlessness return. By these means, vigorously pursued, the most active inflammation, whether seated in the peritoneum or any other internal part, can be more speedily and more effectually controlled, than it ever was by the old method of bleeding to fainting and other active depletory measures; and the patient's strength not exhausted, but left in full vigor to aid in bringing about a speedy convalescence. After the violence of this disease has been subdued by these means, the turpentine emulsion, recommended in gastritis, may be given with good effect; and if there still remains considerable evidence of disease, a large blister should be drawn, and dressed with the mush poultice.

PHRENITIS, OR INFLAMMATION OF THE BRAIN AND ITS MEMBRANES.

Phrenitis is an inflammation of the parts contained in the cavity of the cranium, and may affect either the membranes of the brain, or the brain itself. It is called primary, or idiopathic, when it exists independent of any other disorder; and symptomatic when it arises in consequence of some other disease, as fevers and inflammatory affections; which species is that most universally met with, the other occurring but very seldom, at least in this country. In warm climates, it appears to be sometimes produced by exposure to the intense rays of the sun, and often proves quickly fatal.

Its characteristics are vehement fever, severe pain in the head, redness of the face and eyes, intolerance of light and sound, watchfulness, and violent delirium.

The causes which give rise to idiopathic frenzy are such as directly stimulate the membranes or substance of the brain, or increase the impetus of the blood in its vessels; hence violent fits of passion, intense study, excessive venery, severe exercise, external violence of any kind, such

as blows on the head, an immoderate use of vinous and spirituous liquors, a long-continued exposure to the heat of the sun, and the suppression of accustomed evacuations, as piles, menses, issues, milk drying up, etc., may be regarded as the remote causes. Many acute diseases, and a long want of sleep, may give rise to symptomatic frenzy.

The idiopathic is usually preceded by long-continued and almost constant watching, or frightful dreams, acute pains at first in the neck and back of the head, afterwards extending to the cerebrum, deep respiration, inability to recollect circumstances which have lately happened, suppression of urine, and irregular pulse. As the disease advances, the eyes sparkle, and are violently agitated; there is a ferocity in the countenance, with universal restlessness, deafness, great confusion of ideas, violent ravings, intolerance of light, evident pulsation in the temporal and carotid arteries, and the most furious delirium. The tongue is dry, rough, and of a yellow or black color; the face is of a deep red; and the pulse is small, quick, and hard.

The symptomatic frenzy is constantly preceded by acute fever, or some inflammatory complaint, and is usually accompanied with inability to sleep, constant watching, delirium, picking at the bed-clothes, redness and fierceness of the eyes, wild look, and deep breathing.

Phrenitis is distinguished from mania by the quickness of the pulse, and the attendant fever and pain in the head; and from that species of delirium which occurs in low fevers, unaccompanied with inflammation, by the appearance of the countenance and eyes, for in true frenzy the face is red, the features are rather enlarged than shrunk, and the eyes protrude and sparkle; whereas, in the delirium supervening to low fever, the face is pallid, the features are shrunk, and the eyes pearly. It is to be distinguished from inflammatory fever by the state of the pulse, as in the latter it is strong and full, whereas in the former it is small, hard, and more rapid. In phrenitis, the delirium is the primary affection, but in the other it is consequent upon the general fever.

Phrenitis, whether idiopathic or symptomatic, may always

be regarded as a dangerous and alarming complaint; it often proves fatal between the third and seventh day; and, if long protracted, is apt to terminate in mania, or great prostration of strength; it often terminates in stupor and insensibility. In children, an effusion of water between the membranes of the brain, or in the cavities of its ventricle, is a frequent consequence. Grinding of the teeth, white or ash-colored fæces, suppression of urine, startings of the tendons, with convulsions, cold sweats, a fluttering pulse, and coma supervening on delirium, denote a fatal termination; on the contrary, when there is a copious hemorrhage from the nose, mouth, or lungs, or even from the urinary passages or hemorrhoidal vessels, or when diarrhœa ensues, when the delirium is relieved by sleep, and the patient remembers his dreams, when the perspiration is free and general, the deafness diminished or removed, the pulse less frequent, but fuller and soft, and the febrile symptoms become milder, there are hopes of a recovery.

Treatment. — Tanner says: "The principal measures usually recommended are strict observance of the antiphlogistic regimen; that is to say, general and local bleeding, antimonials in some states of the disease, digitalis, active purgatives, mercury, blisters to the back of the head and neck, and the constant application of cold to the head. With regard to venesection, it is advised that the blood be allowed to flow until a decided impression is made upon the pulse, or until the patient faints.

"When it is remembered that encephalitis is one of the most fatal diseases that can affect the human body, it can readily be imagined, from what has been already stated, that its dangers are not lessened by such treatment. And this seems really to be the case; for Dr. Abercrombie, in speaking of the results of such a course of remedies, says: 'The cases which thus terminate favorably form, it must be confessed, but a small proportion of those which come under the view of a physician of considerable practice; but they hold out every encouragement to persevere in the treatment of a class of diseases which, after a certain period of their progress, we are too apt to consider as hopeless.' With the

greatest respect for this excellent physician's opinions, it still seems to me that the extensive failure of one plan of treatment should merely lead us to try another; and more especially, perhaps, to see if nature, unaided, or only gently guided, will not carry the patient through a disease where the efforts of art are notoriously so futile. Be this as it may, let us determine not to thwart nature, as we may easily do by taking away 'the life of the flesh,' or by poisoning it with antimony, and such like agents. Let us rather be content to watch the symptoms, to calm excitement by sedatives, to lessen increased heat of body by diluents and tepid sponging, to prevent accumulations in the intestines by purgatives, and to diminish maniacal delirium by the application of cold to the head.

"Active cathartics of calomel and jalap, followed in three or four hours by an aperient draught, are often indispensable. They should be repeated every morning, or every alternate day. Croton oil is a most valuable purgative in some of these cases. Dr. Abercrombie says: 'Although blood-letting is never to be neglected in the earlier stages of the disease, my own experience is, that more recoveries from head affections of the most alarming aspect take place under the use of very strong purging than under any other mode of treatment.'

"The application of cold to the head after it has been shaved is a remedy of importance. Pounded ice in a bladder, or a cold evaporating lotion, or especially the pouring of cold water in a stream upon the vertex of the head, will best effect our object. By the latter proceeding, a strong man, in the highest state of maniacal delirium, may often be subdued in a few minutes.

"When, from exhaustion of the nervous force, an extreme degree of collapse occurs, the only chance of rescuing the patient will consist in the administration of stimulants, such as ammonia, sulphuric ether, strong beef-tea, wine, etc. In all stages of the disease the practitioner must watch his patient almost hour by hour, must be careful that he is kept dry and clean, and that the bladder does not become distended.

CHAPTER II.

SPECIFIC INFLAMMATIONS.

Under the above head, we will include the various forms of tuberculous or scrofulous, cancerous, and syphilitic diseases, all of which seem to be the result of a species of morbid action, which, though not of the precise nature of ordinary inflammation, yet is no doubt analogous to it, and often gives rise in its progress to true inflammatory action, modified, however, by the peculiar condition of the system, or of the part which may be affected by the specific action of the original disease. We will take the liberty of quoting pretty largely from Wood upon this subject; and, first, of

TUBERCULOSIS, OR SCROFULA.

In certain cases of the system, a solid extravasated matter is deposited in various parts of the body, which, from the shape ordinarily assumed by it, is called *tubercle*. The morbid state of system which leads to this deposition may be denominated the *tuberculous diathesis*. It is closely analogous to, if not absolutely identical with that which usually precedes the development of scrofulous tumors, and which is denominated *scrofulous* or *strumous diathesis*. In this work, they are considered as one affection. When this state of system becomes decidedly and obviously morbid, it is sometimes called *tuberculous*, *scrofulous*, or *strumous cachexia*.

The tuberculous deposition takes place in one of two forms: either that of small, isolated bodies, or that of irregular infiltration into the tissues. In either case, the matter as first deposited may be gray, semi-transparent, and hard, or yellow, opaque, and rather soft. According to Laennec and Louis, the deposit is originally of the former

character, and afterwards assumes the latter. But the matter is often found in both conditions at the earliest period at which it can be examined; and it seems to the author that, unless otherwise proved, it must be allowed to have been thus deposited.

When in the form of gray, semi-transparent, hard corpuscles, the tubercles have been variously denominated *miliary tubercles*, *tuberculous granulations*, and *gray semi-transparent granulations*. They do not at first exceed a millet seed in size, but gradually increase till they become as large as a cherry-stone or larger. A yellow spot soon makes its appearance within them, which enlarges by degrees until the whole tubercle is converted into a yellow, opaque, curdy matter, so soft that it may be crushed between the fingers. Sometimes they are in this state when first observed. The process of change continues, the softness increases, and the tubercle at length breaks down into a pus-like matter, with which are often mingled portions of the tuberculous substance in a cheesy form. This sort of mixed matter may sometimes be found in the centre of the tubercle, while the circumference remains still hard and unaltered. Not unfrequently, numbers of the miliary tubercles are aggregated together, forming a considerable mass; in which case, several points of alteration may be observed in different parts of it.

The infiltrated tubercle may be in the shape of large irregular masses, as in the lungs; of flattened patches, as upon the serous membranes; or of sheaths to the blood-vessels, as about the veins of the pia mater.—*Louis*. It undergoes the same changes as the isolated tubercles, from the gray and semi-transparent, through the yellow, opaque, and soft, to the semi-liquid pus-like matter.

When thus mature, the tubercle excites inflammation, and consequent ulceration in the surrounding tissue, by which, in many instances, a passage is made for the escape of its contents. The walls of the resulting cavity, which are sometimes lined by a sort of cyst, sometimes consist only of the consolidated surrounding tissue, secrete pus, which continues to be discharged for a long time, often

mixed with the curdy matter. In many instances, however, a healing process at length takes place, the cavity is filled, and a cicatrix only remains. This is especially the case in scrofulous affections of the lymphatic glands. Sometimes there is reason to believe that it takes place also in the lungs, though in the latter the process of deposition and destruction generally goes on more rapidly than that of reparation, and the result is fatal. Sometimes, instead of the series of changes above described, the tubercle undergoes another process, by which the organic matter is absorbed, and an earthy or chalk-like substance is deposited in its place. This may always be regarded as a favorable termination.

The time occupied in these transformations is very uncertain. Sometimes the tubercle remains long quiescent in its original form; and when the change begins, it may be completed in a few weeks, or may continue in progress for years. Not unfrequently, the disturbance produced by the tubercles in the tissue in which they are deposited proves fatal before they have passed even their first stage. This is more apt to happen when the tubercles are deposited in vast numbers, as sometimes in the lungs and the serous membranes.

Tubercles may be formed in almost any portion of the body, and often exist in many parts at the same time. They are most frequent in the lungs, and, indeed, in adults are seldom found in other parts, without existing also in greater or less number in that structure. This, however, is not a universal rule. In children they are often found elsewhere, though wanting in the lungs. After the lungs, the parts most frequently affected are, according to Louis, *first*, the lymphatic glands; *then* the pleuræ, the intestines, the spleen, the liver, the peritoneum, the membranes of the brain, the brain itself, and the bones; and *lastly*, the pericardium, stomach, kidneys, pancreas, etc. In their various positions they produce great disturbance in the surrounding tissue, and give rise to morbid affections, which have received different names according to their seat and character. Thus, in the lungs they produce phthisis; in the

pleuræ, chronic pleuritis; in the peritoneum, chronic peritonitis and abdominal dropsy; in the mesenteric glands, tabes mesenterica; in the arachnoid, hydrocephalus; in the lymphatic glands, external scrofula; and in the bones, white swellings, caries, necrosis, etc.

All ages are liable to tuberculous disease, but the two extremes of life are most exempt. From the researches of M. Papavoine, it appears that before the end of the second year it very seldom occurs; from this period to the end of the fourth year, is more frequent; and from four to thirteen, is exceedingly frequent. After the age of puberty there is some exemption; but the liability returns towards that of maturity, and from eighteen to thirty-five or forty is very great. After this it lessens, and the disease is rare in old age, at least as an original affection.

It must be evident, from the foregoing account, that this is not a local disease. The tubercles can appear in so many different parts at the same time only in consequence of some general depravation of the system. In what this depravation consists is not evident. It has been thought to occur preferably in individuals who present certain natural physical traits. Thus, persons have been said to be peculiarly predisposed to it who have a clear white or rosy complexion; a soft, delicate skin; large lustrous blue eyes, with long eyelashes, and a pearly sclerotica; thickness of lips, especially the upper; a narrow flattened chest, with high shoulders; and, in childhood, a bright, active spirit, and precocious intellect. There is no doubt that persons with the above characters have often been subjects of tuberculous disease; but too much stress was at one time laid upon the complexion, and the color of the hair and eyes. Observation has shown that about as large a proportion of persons with dark hair, dark eyes, and a swarthy complexion are affected, as of those with opposite physical characters. Negroes are, in this climate, more disposed to the disease than the whites.

But more confidence may be placed in the signs which indicate a commencing development of disease, and which often long precede the deposition of tubercle. Such are a

pale, somewhat puffy countenance; swollen lips, which are apt to be sore and chapped in cold weather; tumefaction about the nostrils; occasional purulent discharges from the nostrils or ears; a tendency to soreness of the eyes, and especially to a vesicular eruption upon the conjunctiva; vesicular eruptions behind the ears, and in different parts of the head and face; sourish or otherwise disagreeable exhalations from the skin; slight swelling and induration of the glands of the neck, and enlarged tonsils; a rickety condition of the bones; a weak but excitable pulse; flabby muscles; a rapid increase in height, without corresponding lateral development; and general weakness, indicated by fatigue after moderate exertion. It is not to be supposed that all these symptoms are present in every case; but enough of them frequently are so to justify solicitude, and to lead the prudent practitioner to the adoption of preventive measures. Not unfrequently, a slight febrile movement, rather occasional than persistent, is observed in addition to the other phenomena; and, indeed, such a movement is occasionally the immediate forerunner or attendant upon a copious tuberculous deposition.

The tuberculous diathesis is also characterized by the modified condition of the inflammatory process which it produces. Inflammation, occurring in systems under its influence, very generally assumes a slow or chronic form, is accompanied with comparatively little heat or pain, and, after suppuration, leaves abscesses which heal very slowly, and are sometimes exceedingly obstinate. The affection, under these circumstances, is distinguished by the name of *scrofulous inflammation*. It is very often the immediate result of the tuberculous deposit, acting as a foreign body, and irritating the neighboring parts; and the purulent discharge is frequently mixed with broken-down tubercle in the form of curdy matter. But the deposition of tubercle is not a necessary attendant of all cases of scrofulous inflammation. The diathesis appears sometimes of itself to predispose to inflammation; and when that process occurs from other causes, it assumes the peculiar scrofulous character, even though no tubercles may be present.

After the formation of tubercles, and during their maturation and discharge, the system often sympathizes strongly, and there is almost always at first a simple irritative fever, and afterwards, when suppuration has become established, more or less hectic fever, which, in severe cases, rapidly exhausts the remaining strength.

From the experiments of M. Dubois, of Amiens, it would appear that the blood in scrofulous cachexia has a smaller proportion of coagulable matter in relation to the serum, and that the serum itself is of less specific gravity than in health; while the red color of the liquid is in some degree independent of the red corpuscles, as if these had undergone a partial disintegration.—*Dict. de Med.*, xxviii. 221. The blood is therefore watery and impoverished, and incapable of supplying the nutritive function sufficiently. In phthisis, according to Andral and Gavarret, the proportion of the red corpuscles diminishes, and that of the fibrin increases, with the advance of the disease. That of the red corpuscles is almost always below the healthy standard; that of fibrin often above it. But the increase of the fibrin is a result of the inflammation occasioned by the tubercles; and we have no proof that it is in excess under other circumstances.

What is the nature of this affection denominated tuberculous disease, but of which the tubercle is a mere incident, though a very general, characteristic, and most important incident? This question cannot be fully answered in the present state of our knowledge. We know that, generally, the vital energies are enfeebled, and the blood impoverished or depraved. It is highly probable that the tendency to the tuberculous deposition is due directly to the condition of the blood. But the state of the blood must itself be dependent upon some deficiency or depravation of the functions by which it is elaborated, and we are thrown back upon some original vice in the organic constitution.

A knowledge of the causes which favor the development of the disease may aid us somewhat in understanding its nature. These are almost all of a character fitted to lessen the energies of the system, and to impoverish the blood.

Insufficient food, confinement, want of fresh air and exercise, habitual exposure to cold, sensual excesses, great loss of blood or other depletion, and the depressing passions, greatly favor the development of tubercles, and even appear capable sometimes of generating the diathesis. It has been found, by experiment, that tubercles are generated in some of the lower animals by close confinement. But there are many individuals upon whom all these causes may be made to operate, and so intensely even as to produce fatal effects, without giving rise to this particular disease. Indeed, it is probable that the great majority of mankind might perish under these circumstances, and give no sign of tubercles. There is something more, therefore, than mere debility. There is some inherent peculiarity of the organization, generally derived or inherited from the parent, which serves as the basis of the disease. The other causes are in general merely exciting. They, no doubt, often induce the disease when it might otherwise never have been developed; but they are generally incapable of producing it, unless in subjects having some innate disposition towards it. In the great majority of fatal cases of tuberculous disease, the original and essential cause will probably be found to be an inherited peculiarity of organization.

The lymphatic system is evidently the seat of scrofula, and the lymphatic vessels are those which carry a light-colored or clear fluid. It is generally called the absorbent system; but this, we believe, is not sufficiently full to convey the whole truth in relation to its functions and uses. For the benefit of the reader, a few observations will here be made upon this system. It is composed of three orders of organs.

1st. The absorbent vessels, so called, are an assemblage of small, delicate, transparent, uneven vessels, provided with valves, arising from innumerable roots or fibres, from the external and internal surface of the skin, from the membranes of the cellular tissue, etc. "These are distributed among all the organs, like the arterial vessels, of which they are the terminations, and terminate mostly in the thoracic duct," which empties into the left subclavian

vein, and its contents become mingled with the blood; but some communicate directly with the blood-vessels. "Some anatomists distinguish the lacteals [the vessels which take up the nutrient material from the stomach and bowels] from the lymphatic vessels;" but this is useless in practice.

2d. "The thoracic duct, in which the major part of the lymphatic vessels terminate."

3d. "The lymphatic or conglobate glands." These are small, oval, reddish bodies, composed of white vessels, blood-vessels and nerves, distributed here and there along the tract of the lymphatics, as the ganglions are "along the nerves." They are in greater abundance in the fat of the bowels, along the inside of the thighs, in the groin, about the neck, in the arm-pits, and generally in all parts of the body "where cellular tissue abounds."

This system has two principal functions—absorption, and the preparation and assimilation of the nutritive fluids.

Under the first head or function "is comprised every thing that enters into the current of the circulation, to become identified with our structure," excepting those substances which, being attracted from the air, mingle at once with the blood in our respiratory organs.

"Absorption is effected," *first*, on the digestive tubes, "on the materials designed to repair the constant waste of the body;" *second*, on the surface of the skin, and on the interior of the air-vessels of the lungs; *third*, in the interior of the cavities of the body. This mode of absorption is proved to exist by the mere fact of exhalation. If no absorption took place on the surface of the internal cavities, we should soon be filled with water. *Fourth*, in all the spaces between the folds of the cellular tissue, and "wherever there are any absorbing vessels."

The second function of the absorbent system is the preparation and assimilation of the nutritive fluids. In the process of forming blood, the lymphatic or absorbent system holds an important place. By the powers of this system, the homogeneous mass, which is chymified by the gastric juice and vital functions of the stomach, loses its inanimate character, and begins to become animalized, and

makes approaches to vital matter. It is here the first step is taken from the physical to the vital world; "a species of preparation which disposes them to be clothed with the properties of the blood which they are destined to renew." This may suffice to show how great an influence is exercised by the lymphatic system on the material composition of the body. We see, therefore, that the formation of blood is essentially connected with the absorbent system; it follows all its alterations, all its vicissitudes. Thus we see that upon the lymphatic system depends, to a certain extent, emaciation of the body, as well as the excessive development of many of its parts, or redundance of fat, serous infiltratives, enlargement of the glands of any and every part of the body, the removing of glandular swellings, unnatural depositions of fat, etc. These things are, however, all performed by a vital process, and not by humoral processes or mere percolation.

The remote causes of scrofulous diseases. These are three.

First. "Every thing that may effect a diminution of tone in the solids," and particularly those of the lymphatic system.

Second. "Whatever may exalt the irritability of this system, or blunt its sensibility;" and,

Third. "Every thing that occasions chyle or lymph of a bad quality," such as unwholesome air, any derangement of the offices of nutrition, or the functions of the skin or lungs.

We now come to the predisposing or principal causes of scrofula, the first of which may be said to be *hereditary tendency*. It is a lamentable fact that a majority of the children that are born of scrofulous parents bring into the world with them this tendency, which, when it is hereditary, is apt to develop itself in early life. These facts are doubted by some; but there are too many instances by which this truth may be attested. We are acquainted with whole families in which the scrofulous taint has been perpetuated through two or three generations, says Hufeland. In countries where this disease is very common, as in England, the people are so well convinced of this truth, that

one of the most important points in the choice of a wife or husband is, that she or he shall be free from the scrofulous taint.

It is a fact in physiology that constitutional diseases are hereditary. They are transmitted from parent to offspring, as life is transmitted "from one to another." Children are often born of scrofulous parents with the disease fully formed; we see this manifested in scrofulous sore eyes; in other cases, in eruptions on the skin, ulcerations, and discharges from the ears in very early life; and these are all symptoms of scrofula in the bud. Others have enlargements of the glands; and others spina-bifida, or disease of the backbone. The cellular tissue is often indurated and swollen. These symptoms were first noticed in France, and then in England and Germany, as signs of scrofula.

After all that has been said, it does not follow invariably that a child born of scrofulous parents should have scrofula; for "art sometimes contends successfully with nature," and the disease may be perfectly eradicated from the system, and thereby its train of procreation arrested.

Of the age and sex most subject to scrofula. All experience and observation go to show that children and women are particularly disposed to scrofula. This may not astonish us when we recollect that weakness and nervous susceptibility are circumstances most favorable to its development. This subject is of too much importance to keep back any thing that will throw light upon it; and we therefore say that nothing is more apt to communicate to children the disposition we speak of than weakness of the parents, and especially weakness of the organs of generation, "an ordinary consequence of onanism and venereal excesses. This fate is reserved for the children of those who have abused their youthful powers." It is probably not so much the venereal virus itself that produces this melancholy effect as the abuse of venereal pleasures, and "especially masturbation." Experience has so fully proved the truths here stated, that one must be uncandid to call them in question. Is it not reasonable that exhausted parents must communicate to their offspring a character of debility, of which the

lymphatic system, like other tissues, must partake? Children of aged and broken-down parents bring into the world a disposition of constitution which is easily awakened into scrofulous action, and that at an early period of life. The temper and constitutional condition of parents at the time of conception is that which is communicated to the child, and not what they once were.

There is another fruitful source of scrofula, and that is *syphilis of parents*. We shall, on this point, give an extract from Hufeland, which every physician of experience and observation will ratify. "It is certain that the scrofulous disease is often nothing but the consequences of syphilis. I have frequently seen syphilitic parents give birth to children who, either at their birth or very soon afterwards, presented all the symptoms of the scrofulous taint; and it has been remarked that since the appearance of the pox, this taint has become much more common than it was before. At the present day, it is more frequent in those countries where syphilis is very prevalent than it is in others. The very symptoms, in many cases, have a striking resemblance to *lues venerea*." However close and strong these remarks of Dr. Hufeland may be, every physician of experience and observation will bear him out in their truth.

Unwholesome food is another source of the scrofulous disease. Any kind of diet that the child's stomach will not properly assimilate into chyle, whether it be unwholesome for others or not, will, in that child, aid in laying the foundation of scrofula. Of this kind of diet, we may mention improper artificial suckling—the child taking impure or badly prepared milk; for, of all the fluids of the human body, none is more endowed with vitality than milk. This is proved by the almost instantaneous influence exercised by moral affections on the mixture and intimate combinations of its constituent principles. "Milk is vital while enclosed in its secreting organs; and the vital principle which animates it, while it appropriates it to the infantile constitution, renders it, at the same time, more nutritious and more digestible." Compare the children that are nourished at the maternal breast with those that are artificially brought

up, and we shall find generally that while the former are fresh-looking and healthy, the latter remain weak and languid, at least for the first one or two years of their existence. See how the consumptive invalid, who is ready to die with debility, bears a diet of milk sucked directly from the teat of the animal, or drunk while still foaming with its natural heat. But let the same milk become cool, and lose the heat of vitality which it brought from the animal that afforded it, and it will become indigestible, and sicken the invalid who drinks it. Whence arises this difference, if it does not depend on the principle of life with which the milk is animated while enclosed in the organs that prepare it, and which vanishes as soon as it ceases to be in contact with them? Sucking, then, is the order of nature, by which she supplies the infant with a portion of life from the mother, till its system becomes so perfected that it can vitalize its own food. Children, therefore, that are raised by hand, or artificially fed, are more liable to scrofulous affections than those that are properly nursed by the mother.

We are apt to forget that animals which furnish us with milk feed entirely on vegetation, or are herbivorous, while women derive their nourishment from each of the three kingdoms of nature. There is, therefore, a difference in the milk of animals and of women; and this difference is produced by the different aliments on which they live. There is in the milk of animals something of a vegetable nature that does not exist in the milk of women. Hence the frequent acidity of the stomachs of children that are raised by hand. The child, by the motion of its lips in sucking, occasions a flow of saliva into its mouth, which mixes with the milk and enters into combination with it, thus causing it to be more easily digested.

It is a fact that delicate stomachs bear solid better than liquid food, the only reason of which is, that solids are mixed with the saliva before they are swallowed, while liquids enter the stomach just as they are taken into the mouth. "It is difficult to portray all the difficulties that arise from artificial suckling." The milk is sometimes too

hot, sometimes too cold, sometimes too old, and sometimes spoiled.

Again: the milk of different animals differs very much, that of no two, perhaps, being exactly alike; and therefore a mixture renders the milk less healthy than it would be if it were all taken from one cow.

It is a little surprising, yet true, that ass's milk approaches nearer to that of women than the milk of any other animal.

All farinaceous substances that have not been fermented or well boiled are difficult of digestion. The chyle they furnish is pasty and of a weak consistency; it circulates slowly in the lacteal vessels and clogs them up. Such is the effect of potatoes when they constitute the principal diet of children; and it is remarkable that scrofula is very common "where children are nourished on this root." Vegetables that are very watery, and consequently contain but little nourishment, promote scrofula.

The habit of feeding children on a little of every kind of food, and thereby weakening the powers of digestion, and making bad chyle, promotes the scrofulous disposition.

Another fruitful source of scrofula is impure air. "This is one of the most frequent and powerful causes of the disease in question." Cold, damp air is most favorable to its development. This is the reason why scrofulous affections are almost endemical in low places, "particularly with a northern aspect." "They are more common in the north than in the south;" are rarely seen under the tropics; but are frequently met with on the shores of the sea, "and particularly in England, among children that live in low, damp places."

Goitre, which is a local affection, is endemical in mountainous countries.

Cretinism, a general affection, which we regard as the highest degree of the scrofulous diathesis, and which is endemical in the deep valleys of the Tyrol, and the *Pays de Vaud*, is visibly the effect of cold, humidity, privation of solar light, a highly carbonated atmosphere, and perhaps,

also, of a peculiar modification of the atmosphere, which chemistry has not yet been able to detect.

An inconstant and variable air is another fruitful source of scrofula; and this is the reason why it is more common in high, mountainous countries than in those more level, or slightly undulating.

An air highly charged with animal vapors or carburetted hydrogen gas is very productive of scrofula. Hence, large manufactories and crowded cities are less wholesome and produce more scrofulous cases than the country. The higher the houses and the narrower the streets, the more unhealthy will be the city, and the more cases of scrofula will be found in it. "It is not possible to conceive of the whole influence of bad air in producing the strumous habit."

This influence is naturally enough explained, on the supposition of the suspended functions of the skin, the filthiness which follows the debility which results from it, and the absorption of the deleterious principles of the atmospheric air. "*Every thing that will weaken the digestive powers will promote scrofula;*" such as acidity of the stomach, intestinal worms, the abuse of opium and other narcotics in childhood, want of exercise, want of cleanliness, abuse of heat or cold, precocious studies, too early exercise of the sexual organs, onanism, and great depression of spirits, etc., all of which, by weakening the powers of digestion, aid in causing an imperfect chyle to be formed, and thereby assist in laying the foundation for a scrofulous disposition in the constitution.

It is also excited into action by diseases of irritation; and hence we often see scrofula follow small-pox, measles, or scarlet fever. These diseases, if badly treated, as well as many other diseases, will often develop scrofula when it would otherwise have lain dormant. And here, perhaps, the physician or nurse should bear the blame.

We now come to treat of the external appearances of scrofula; and, in doing so, we shall avail ourselves of the ample experience and clear elucidations of the physician to the King of Prussia, than whom no one has been more satisfactory on this subject.

Of the external appearance of scrofula. There is a habit and an external appearance connected with the scrofulous diathesis that is almost inseparable from it. Where this appearance of the body is presented, no doubt as to the scrofulous taint can exist. The principal features of it are,

1. A short, thick neck.
2. Jaws rather broader and stronger than common.
3. The head rather large in proportion to the other parts of the body, especially the back part of the head.
4. Light-colored hair.
5. The face slightly bloated; its skin delicate, transparent, white, and somewhat rosy.
6. Most commonly the eyes are blue and the pupils large. This appearance often indicates a scrofulous state of the mesentery.
7. The upper lip very thick. This is one among the symptoms which do not mislead. It is, however, sometimes periodical.
8. The nose is often a little swelled, red and shining.
9. The whole body appears to be fat and well nourished; but, on a close examination, the flesh is found to be flabby and soft. It does not possess the resistance and elasticity which indicate health and vigor.
10. The belly is somewhat larger than it ought to be, although it may not have become as hard as it will be in the future progress of the affection. Sometimes it becomes very large from the slightest cause. The following developments of the organs are irregular; as,
11. The development of the teeth, bones, and muscles. Learning to walk and talk, also, are either difficult, backward, or very irregular.
12. The intellectual faculties and organs of generation are prematurely developed. Such children are apt to become addicted to masturbation, and should be attended to on that subject. Girls in whom these symptoms exist require more attention from their mothers than those who are not of a scrofulous habit.

It is not an uncommon thing for a teacher or parent to be struck with an unusual manifestation of intellect in such

children; but in a few years they arrive at their acme, and all efforts to push them further are vain.

The scrofulous taint shows itself even in the development of puberty. "Retarded and irregular menstruation often depends on no other cause."

Persons laboring under the scrofulous taint are apt to bleed at the nose frequently, and have frequent colds or coughs, with a wheezing respiration. "Small spontaneous ulcerations, peculiar to children, situated on the inside of the legs and thighs, and under the armpits, which do not yield to the ordinary measures of cleanliness, and small pimples of various forms and sizes, and scabby," are signs of scrofula. The body may enlarge in some parts more than others, and appear to be swelled, "but does not pit on pressure." This swelling is seen on the arms, legs, face, and scrotum, and this symptom should be particularly noted by the mother. Pains in the insides of the legs and thighs, subject to periodical returns, sometimes accompanied with more or less swelling for a few days, and a white discharge from the vagina of infants, are further signs.

There is also, in scrofulous habits, a manifest disposition to a sour stomach. The stools are variable; sometimes too solid, sometimes too liquid, and rarely of the right color and consistency.

The appetite is irregular, with a particular fondness for dry bread; mucous disorders of the bowels, flatulency, distension of the belly, wind in the bowels, spasms and colics, etc., also accompany the disease. These constitute a large majority, at least, of the second stage of symptoms of scrofula.

We have, however, besides the above symptoms, at different times, a peculiar form of fever, which, by some, has been called mesenteric fever, gastric fever, inward fever. These different forms of fever show nothing more nor less than that there is a scrofulous disposition in the system, though it may not yet be developed; and this peculiar form of fever, in its different variations, might more properly be called scrofulous fever. It generally appears in children under two years old, is very irregular, and its course and

type are indefinite. It is various as to its duration, sometimes passing off in a few days, and, in other cases, continuing for several weeks, but in a mild form. The temperature of the body is not high, but the skin is sometimes manifestly too cold. There is sometimes attending it a slight cough, with wheezing. The belly is always a little swelled; and to these symptoms succeed glandular swellings, eruptions on the skin, scabs on the head, and emaciation of the body.

This form seems to be the line of transit from a scrofulous taint or disposition to the development of scrofula.

We have now brought it to that point where it falls, in some degree, under the inspection of our senses. "Not only are the vital forces changed, but the organization of the glandular system is altered; its functions are disturbed, and the disease manifests itself plainly by the swelling of the lymphatic glands." At first, they are small and movable under the fingers; they feel elastic, and there is no discoloration of the skin.

The glands that first manifest this development of the disease are situated in the sides of the neck, under the lower jaw, and under the ears; and a particular examination of these glands will give the proper character of their affection. As above stated, they are at first small, loose, separate, and uninflamed; but, after a while—for their progress to suppuration is very slow—they gradually enlarge, and the swelling is communicated from one to another. The cellular tissue and sacs containing the glands thicken, and the tumor enlarges, till finally it becomes hard and immovable. The glands under the veins and in the groins swell in their turn; and, in some instances, those of the whole body swell.

It is uncommon for a single gland to be affected in scrofula. The virus will extend from gland to gland, in the same region, till several are affected by it; and they are often so connected together as to make an enormous tumor. At length the disease, in passing from gland to gland, affects the lymphatic vessels, which become thick

and hard, and feel like hard cords passing from one gland to another.

These tumors are variable; they sometimes rise and diminish alternately for a long time, while in other cases they enlarge, and remain so for years, before they suppurate. "In proportion as the scrofulous taint increases, the tumors become hard and immovable;" yet they may feel cold and indolent; but, sooner or later, the gland inflames, and suppuration takes place slowly. When the pus is discharged, it is of an unhealthy character, mixed with curds, and, in some instances, with thin, hard, white flakes, or concretions, not unlike small pieces of an egg-shell. "In other cases, the swelling passes into a schirrous and even an osseous state."

In some cases, the lymphatic glands acquire an enormous size; they have been seen to weigh "ten pounds and more." We suppose, in these cases, that the tumor had changed its scrofulous character, for that of a steotomatous tumor, though the scrofulous blemish or hue may still remain upon them.

In some cases, the whole body is covered with scrofula; that is, tumors and sores appear on every part of the body.

The external surface is not the only part affected by scrofula; the fat and glands of the bowels become the seat of the disease also. The fat of the bowels, stomach, and chest, in these cases, is studded with tumors, from the size of a small pea to that of a walnut. This, we can readily see, obstructs the due process of chylification and mesenteric functional nutrition, and the patient becomes extremely emaciated, and dies from starvation. This is what is called, by writers on the diseases of children, *tabes mesentericus;* which is nothing more nor less than scrofula.

The heart, brain, and liver, in their turn, become affected with this disease; but, in adults, the most common of all its determinations is the lungs. Here it shows itself in the form of tubercular consumption; which, though it may be warded off for years, will ultimately prove fatal.

Scrofulous children rarely have a clean head. They are

liable to have small pustules and oozing sores on the back of the neck, which emit an unpleasant smell. Sometimes these sores terminate in real scald-head. These children are apt to have sore eyes, which are difficult to cure. The glands of the eyelids pour out a viscous humor, denominated by Scarpa "palpebral flux." The eyelids, in the morning, are glued together, and are separated with difficulty. The sight is frequently weakened, and, in some cases, the *cornea*, or black part of the eye, becomes diseased and turns white; in which case, vision is destroyed.

Such children frequently have styes on their eyelids, and their ears are apt to discharge an ichorous, thin, fetid humor.

In consequence of the disease of the mesenteric glands, the belly enlarges and becomes hard, while the legs and arms fall away, till the skin may be wrapped around them like a piece of cloth. The skin shrivels, looks dead, and feels harsh.

All scrofulous ulcers are not preceded by swelling of the glands, for some of them seem to be developed spontaneously, in consequence of a lesion of the lymphatic system. These sores present a foul appearance, the matter formed in them never being of the healthy kind; it is clear, watery, and very irritating. They heal in one place, and break out in another; they are not very painful, but are obstinate to heal, and tend to perpetuate themselves almost without end.

To conclude these remarks, we will simply say, that scrofula terminates in disorganization, sooner or later, if not cured before it arrives at that point. The manifestations, then, of disorganization are: *First*, a wasting away of the whole body and limbs, from mesenteric disease. *Second*, white swellings in the joints. *Third*, spontaneous dislocation of the joints. *Fourth*, suppurations of the glands in different parts of the body. *Fifth*, ulcerations on the surface, and about the eyes, head, and ears. *Sixth*, scrofulous dropsies. *Seventh*, tubercular consumption, and enlargements of the bones, caries, and spina-bifida. *Eighth*, scrofulous cancer. *Ninth*, *tabes abdominalis*, or abdominal consumption. *Tenth*, rickets. *Eleventh*, a peculiar affec-

tion of the nervous system, such as spasms, cramps, paralysis, or palsy, supervening upon and caused by the retrocession of scrofulous matter from one part to another. *Twelfth, cretinism*, which, perhaps, is the highest grade of the strumous constitution. In this case, the whole body or system is scrofulous.

We might write a volume on scrofula, but here we must conclude; the importance of the subject being our only apology for the length of this description of the disease—a disease than which there is no other so full of importance to the human family. The fond father, the loving mother, the tender, innocent infant, who has had no part in bringing itself into the world, and into this state of suffering; the general and individual prosperity, happiness, and peace of society—all call aloud upon parents to examine this subject closely, understand it well, and assiduously avoid the causes which produce it.—*Bright.*

Diagnosis.—Scrofulous inflammation of the glands is distinguished from ordinary chronic inflammation of the same parts by the greater hardness of the tumors, their less degree of tenderness upon pressure, their longer continuance and greater indisposition to yield to treatment, their frequent complication with other scrofulous affections, and by the state of system which precedes or attends them. The practitioner will also be influenced in forming his judgment by the hereditary or family influences, which may have served to create a peculiar predisposition in the patient.

Treatment.—The point which should be first aimed at is the correction of the peculiar state of system in which the tubercular deposit, and the other characteristic morbid phenomena of scrofula, originate. While this condition remains, our efforts to correct the local disease will at best be useless, and may be very injurious. Either the tumors will resist our remedies, or, if they yield and disappear, the diathesis will exhibit itself in disease of some other and more dangerous part. It is no uncommon event for the recession of scrofulous swellings upon the neck, or in other external situation, to be followed by pulmonary consumption.

Instances of this kind have come under the notice of the author. The late Dr. Parrish, of Philadelphia, whose experience in this form of disease was ample, had so much dread of such translations, that he always employed measures calculated immediately to discuss scrofulous tumors with great caution, and generally preferred leaving them entirely alone, addressing his remedies solely to the system. That the swollen glands are sometimes relieved exclusively by local means, and with impunity, only proves that in mild cases the morbid tendency may exhaust itself by the first demonstration, and cannot be admitted as a justification for a similar course in cases where the tendency may be much stronger and more permanent.

In order to correct the state of system, it is of the utmost importance to remove the causes which may have produced and may still be sustaining it. The patient should be surrounded with circumstances most favorable to the production of sound health without undue excitement. The vital forces should be invigorated, and the vital actions moderately supported; but care should be taken not to stimulate the latter beyond the healthy standard. A fresh, pure air at all times, and exercise within the limits of fatigue, are among the most efficient remedial measures. If the patient be compelled to labor for a livelihood, he should, if possible, select an avocation in which the muscles generally might be called into action, and which would not require confinement to close, and especially to crowded apartments. Among the worst situations for a scrofulous patient are the crowded wards of an ill-conducted and over-peopled hospital. The diet should in general be simple, digestible, and nutritious, but not stimulating. Farinaceous substances, the more easily digested fruits and vegetables, milk, meats in moderation, and especially boiled meats, may be employed. Should the patient find himself over-stimulated by animal food, he should diminish the quantity, or abandon it for a time. But in relation to diet, reference must be had to the stage of the disease and the state of the system.

It is therefore always safest to commence with general treatment, and let the local disease alone, at least for awhile.

The best *alterative* which I have ever used, in the course of a long experience, in scrofula, is the following: Fluid extract of sarsaparilla, six ounces; tincture of valerian, two ounces; syrup of rhubarb, two ounces; oil of sassafras, one drachm; piperin, thirty grains; iodide of potassium, six drachms; mix. Dose, a teaspoonful three times a day, for a child, to be taken in milk; a tablespoonful may be taken by an adult. After the above quantity has been taken, the medicine should be suspended for a week or two, and the following given instead: Wild-cherry bark, elecampane, and burdock root, each, one ounce; good spirits, one quart; let it stand forty-eight hours, then strain, and add one pound of coarse-grained cane sugar, and heat until it dissolves. Dose, a tablespoonful for a child two or three years old, and in proportion for older persons; it is best to give it, and all other medicines intended to enter the circulation, *after eating*. The medicine then combines with the food, and is absorbed with it; whereas, if given on an empty stomach, it is often refused by the absorbents, and passes off with the dejections, and no benefit is derived. The principal object of changing the medicines is, that the system may not become insensible to their action by long repetition. These means, with the occasional use of others for meeting particular conditions, as laxatives in constipation, prepared chalk and nutmeg, for too much looseness of the bowels, etc., have, in my hands, superseded the necessity of resorting to any other internal remedies for removing the constitutional disease; and, this being done, its local manifestations will be easily managed, and often will disappear without the use of any external means. When there is much deficiency of the red globules of the blood, shown by the want of color on the surface, and a tendency to bloat, indicating dropsical effusion, iron, in some form, is recommended by every author, and its use should never be neglected. The best form which I have found for giving it is the following: Take of elecampane root, four ounces; water, one quart; simmer for two hours, strain, and then

simmer it down to about half a pint; add one pound of coarse brown sugar while the infusion is hot; after it has cooled, add one ounce of burnt copperas, [sulphate of iron,] well pulverized and sifted; mix thoroughly, and shake the bottle well before using, each time. Dose, a teaspoonful after each meal.

Now, why the above form should act better than many other preparations of iron, I am not able to give a very satisfactory reason; but that it does, much experience has proven to my full satisfaction. I will relate a case illustrative of its power over this cachectic condition: A son of Mr. T. Mason, of Smith county, of rapid growth and flabby texture, had exposed himself, along with other boys, by wading in the creek, catching minnows; a severe cold ensued, attended with enlargement of the glands of the throat and neck, followed by general bloating of the whole body; surface unusually white and apparently semi-transparent, much resembling a frozen turnip; breathing hurried by the least exertion; general muscular weakness, and great indisposition to move; pulse rapid; and, though the artery felt large under the finger, yet the slightest pressure was sufficient to arrest the current of the blood. I drew a few ounces of blood from the arm, in order to ascertain whether the peculiar whiteness of the surface was really owing to deficiency of the red corpuscles, or to the effusion of serum in the cellular tissue under the skin, or to both. I found the blood almost colorless; it merely left a slight dirty-looking stain upon white linen. I prescribed the above formula in tablespoonful doses three times a day, and nothing else, except bathing in hot mustard water, and dry friction to the surface; and requested that I should be informed if no material amendment was experienced in a few days. I heard of him no more, until about three weeks after, when I was sent for to see another member of the family. While there, a fine rosy-cheeked boy came into the room, and seemed unusually glad to see me; his father observed that I didn't seem to recognize my patient, and I had not, nor could I, after being informed that it was the same child whom I had before seen, with hardly vitality sufficient in

the blood to continue the very lowest manifestations of life. There was now evidently an excess of red corpuscles in the blood, and, on examination, I found his pulse not only full, but also rather resisting, indicating active plethora; and fearing that this condition, if continued, might lead to the development of some form of active inflammation, I ordered the medicine to be discontinued and his diet restricted; no return of scrofulous or cachectic symptoms were afterwards seen.

I will now give a very different case. The patient was a youth of about eighteen, but would have been taken for ten or twelve. So deficient had been the development of the physical system, that signs of puberty were wholly wanting. His weight was but sixty pounds; and much the larger half of this was owing to a hard and tumefied abdomen. His skin was shrivelled, and of the color of pipe-clay; in short, he presented all the symptoms characteristic of a sample case of cachexy and dirt-eating. He came of scrofulous parents; and, out of many brothers and sisters, all, except one beside himself, had died of some form of the disease before puberty.

Notwithstanding this patient was so emaciated, and had so little vitality, yet there was a constant tendency to fever, alternating with sweats or diarrhœa. I prescribed the before-mentioned formula, as in the other case; and, to break up the fever, prevent the wasting discharges from the surface and bowels, and also arouse the liver, which was enlarged and torpid, I gave a pill every night made as follows: blue-mass, sul. quinine, and castile soap, each twenty grains; make twelve pills.

The pills were discontinued after the twelve had been taken; but the chalybeate and the tonic syrups were continued alternately for several months; a gradual improvement was soon perceptible, and in twelve months the change was truly remarkable: from a puny-looking *child,* he had changed to quite a respectable-looking *young man;* puberty had not only taken place, but the new, rich blood had occasioned feelings which prompted him to "take to himself a wife."

As I left that neighborhood soon after the occurrence of this important event in his history, I am unable to follow his fortunes farther; but it would be interesting to learn, in the event that he became the father of children, whether they inherited the constitution of their parent as a scrofulous boy or as a vigorous man. I would judge the latter; "for thou shalt beget a son in thine own image and likeness:" such as thou now art, and not such as thou hast been, or may yet be in the future.

Local Treatment.—Although scrofula is a constitutional disease, and must be met by remedies addressed to the general system, which will remove the scrofulous *condition* out of which or from which the local manifestations proceed, yet much may often be done by means applied directly to the local disease. By these measures, if timely resorted to, the external disease may be kept in check, and time gained for removing the constitutional condition, which it is often very important to gain, as much suffering and annoyance may thereby be warded off, and, when seated about the neck, or other parts usually exposed, deformities prevented, which is no trifling consideration in the case of girls; unsightly scars about the throat and neck are little less dreaded than death by them; and this feeling, to a certain extent, is not only natural, but right. God made the beautiful as well as the useful in nature; and in man, and especially woman, he exhibited the finest specimen of his "handiwork," and it becomes our duty, as far as possible, to prevent this inimitable work of God from being marred, and its beauty turned into deformity. But, besides this, the local affection reäcts upon the general condition, and makes it more difficult of removal; and, in case of large suppurating surfaces, this is often impossible to be done, owing to the exhaustion which they occasion by the heavy draught which is made upon the materials of nutrition; and the nervous disturbance and want of rest which they occasion, often greatly interfere with the general health; so that local treatment is, in many cases, not only a valuable assistance, but an indispensable necessity to the successful management of the case.

These remedies may be properly divided into two classes:

the first includes those which have a tendency to bring about resolution, and so prevent suppuration and the formation of an abscess. The second embraces all those means which may be rendered effectual in hastening the reparative process by which lost tissues may be restored, and an abscess healed, if already formed. While upon the subject of general treatment, it was unnecessary to specify particular forms or manifestations of the scrofulous disease or condition; but now this becomes essential, as the treatment will have to be varied according to the nature of the tissue principally involved and the locality of the local disease. And, first, of that form known as *king's evil,* involving the glands of the neck and throat. Fortunately, these enlargements are usually very slowly developed, giving ample opportunity for the exhibition of constitutional remedies, as well as for the application of local appliances; but no time should be lost in bringing every means to bear upon the disease as soon as it is known to exist; for when the scrofulous predisposition or diathesis has once been awaked by an exciting cause, and the peculiar inflammatory action characterizing active scrofula set up, the longer it continues, the more intense the scrofulous condition becomes, the greater will be the amount of tissue especially involved, and the further will be the progress of structural change, and, of course, the greater will be the difficulty of restoring the natural condition again, both general and local. Those having the care of children, therefore, who have inherited a scrofulous taint, or who have shown any predisposition to that disease, should timely institute such a course of management as will be most likely to ward off the development of the disease, or to check it, as it were, in the bud.

Pretty full directions have already been given as to the best general management and treatment, which the reader would do well to become perfectly familiar with; and if there have been some things said which are hard to understand, and unfamiliar terms used, which I know are very annoying to most readers, yet recollect that the subject required them, and could not have been treated sensibly without their use; and a few re-perusals will not only enable

you to comprehend the principles, but will render these hard terms "as familiar as household words." "Words are the signs of ideas," and you will hardly receive many new ideas without also having to learn new words. Doctors, and writers on medical subjects, are often upbraided with unnecessarily using words unfamiliar and often harsh to the ears of the unprofessional, but they do so of necessity; the idea intended to be conveyed must have a representative, and often none can be found in the common vocabulary, and circumlocution, or going round about to get at the matter, is unpleasant in conversation, and often becomes of necessity low and unpardonably vulgar in a writer, and, after all, generally fails to convey the clear and precise meaning which can be done by a single word fitly chosen. The author has not, therefore, tried to bring down the subject of the science of medicine to the level of the entirely unlearned, but he has endeavored to meet them half-way, and has, as far as possible, used the same term to represent the same idea, so as to lessen, as much as can be done, the labor of learning new words; and he thinks that the careful reader who has followed him thus far will find himself little annoyed hereafter with new terms, except the mere names of diseases; and, as he has almost necessarily become familiar with most that have been used, he will move pleasantly through the balance of the pages of this work. But to return from this digression.

We were saying that while the general course calculated to remove the scrofulous condition was steadily persevered in, measures should be taken to cause the absorbents to remove the morbid deposits composing the tumors. Many authors protest against the use of such means, believing that the constitutional disorder would be augmented by throwing into the system the materials of which these enlargements are composed, and that it is best to solicit suppuration in them, so that the tuberculous matter might, in this way, find an outlet.

But as long as the scrofulous condition remains, the material of which tubercles are formed will be still manufactured; and, as we have seen its production is always en-

couraged by the mischief of the local disease, it appears to be reasonable that endeavors should be made to cut off this aid to its production; and the result of such efforts have, in our hands, proved entirely satisfactory, and fully convinced us that the above is the true philosophy upon the subject.

Therefore, when called to see a patient whose general appearance and history indicate a scrofulous constitution, and we find, besides the symptoms arising from the general strumous condition, enlargements of the glands of the neck, or the outcropping of the disease in any other form, we at once put him upon the general treatment before recommended, and also make vigorous endeavors to suppress the local manifestations; and as all these manifestations are the result of inflammatory action, modified, it is true, by the general condition, and therefore properly classed as specific, yet still it is inflammation, and composed of the same elements with other inflammations, and may be successfully treated by the same means. Such means will then be proper which tend to bring about the first and most favorable termination of inflammation, viz., by resolution; and these are such, as my readers have been informed, as will excite capillary action in the part, and thus relieve the congestion, and, at the same time, excite the absorbents to take up the morbid deposits, and thus remove or rectify the structural change. A liberal application of the chloroform liniment will often meet all these indications, but I generally prefer to aid its action by other means, so as to increase the certainty of success; therefore, after bathing the tumefied parts for 15 or 20 minutes with the liniment, I paint it well with tincture of iodine, and, when this is dry, cover all the enlargement with collodion. In treating of the general management of inflammation, we spoke of the advantage derived from equable pressure, obtained by the roller bandage; but this could not be applied to the neck or groin, or other parts often the seat of scrofulous enlargements, but I have found all its advantages could be obtained by the use of collodion; the contraction which takes place on drying, occasions very considerable pressure, and that more equably than can ever be done with the bandage, and by this means the enlarged vessels are compressed

so as to force their contents onward, and supported so as to enable them to regain their tone, and the absorbents stimulated to take up the morbid deposits; for these vessels are so endowed, that pressure is the natural stimulus which calls them into increased action; by this means foreign substances, or dead parts, are either eaten up by the absorbents, or the surrounding tissues cut away, and the offending body loosened, and a way prepared by which it may escape, or be extracted. A perfectly sound limb may be made to diminish under the pressure of the bandage, and new products are always more readily acted on by the absorbents than the permanent tissues, which enables us to cause morbid deposits to disappear, and still leave the natural parts entire.

My readers will now perceive that stimulation, to excite the vital activity of the capillaries, and pressure, to promote absorption, are the means which would be naturally suggested by a knowledge of what is wanted to be done, in order to remove these scrofulous enlargements without the tediousness and inconvenience of suppuration and ulceration, and without entailing a blemish upon the patient. But if the disease has proceeded so far that a termination by resolution cannot be brought about, then the next best end that can be obtained is active suppuration. The lye poultice will usually assist maturation as much as any application that can be resorted to; and as soon as there is any evidence of softening in the centre of the tumor, it should at once be opened by making a free incision with a sharp lancet. The operator will perhaps think he has opened it prematurely, for, in this stage, nothing will probably escape but serum stained with blood; but if the part is now dressed with some stimulating poultice, pus will soon appear. These risings should be opened as soon as possible, for two reasons; one is, that if you wait for it to become ripe, like the common phlegmon or boil, it will consume much time, as these risings are often extremely slow in maturing; and, secondly, as the amount of fibrin, which chiefly forms the plastic lymph, by which lost parts are repaired, is always deficient in the scrofulous condition, if the skin is suffered to become broken by ulceration, or become

very thin, considerable loss of its substance will be sustained before the reparative process can be set up, and an ugly scar will inevitably follow.

But if the disease be timely attended to, the means recommended will rarely, if ever, fail to produce resolution. But their daily application must be persevered in until the tumor has very sensibly diminished; then the surface may be covered by *court-plaster*, which will tend to continue the necessary support to prevent a return of the swelling.

If, after the rising has been lanced, and poulticed until the centre, or core, has become detached and removed, the ulcer should not be disposed to heal, it must be *stimulated;* and nothing has been found to answer this purpose so well as the chloroform liniment. But used in full strength, it generally proves too intensely stimulating, causing more suffering than is necessary, and should therefore be modified by the addition of some bland material; an equal quantity of liniment and mucilage may at first be used, and as the sensibility becomes blunted, less mucilage may be added, until finally the liniment itself may be borne in full strength. But as it is essential that an impression should be made, some smarting is unavoidable; but it only lasts for a minute or two, and then leaves the part more comfortable than it was before the application. As soon as the ulcer appears to be in good condition the liniment should be discontinued, as its protracted use will finally render the part insensible to its influence. The ulcer may then be dressed with pledgets of lint saturated in cold water or whisky. I prefer the latter, as it serves to keep up a gentle stimulation, and thus maintains the healthy tone gotten up in the vessels by the use of the liniment, and prevents a necessity of resorting to that remedy again. Nothing in the shape of grease should be suffered to come near the ulcer; hence all salves and ointments are to be avoided. This seems very strange to most persons, who have seen such applications relied on in the treatment of every kind of sore or ulcer.

I was once attending an Irishman for a chronic ulcer on the leg. After several days he inquired if I was not going

to use some kind of *'intment*. I told him no, I should use nothing that had grease in it. "Well," he replied, "I never knew a sore cured without using an *'intment* or *plasther*."

We have said that a deficiency of plastic material in the blood renders wounds difficult to heal in persons of a strumous habit; hence the frequency and inveteracy of sore legs in such habits; and nothing but a rigid and long-continued course of the means calculated to remove the scrofulous condition, and give tone to and increase the vital energies of the system, will succeed in their management. But the above local measure may at the same time be used, so as to cause the improvement of the local disease to go on or even outrun the restoration of the general health. In some instances, the wasting discharge from a large scrofulous ulcer is so profuse, and its irritability so great, as to reäct upon the constitution so injuriously, that no general treatment will be availing without first getting up some improvement in the local disease. But how can this be done? As the plastic materials of the blood are deficient, the reparative process cannot take place until these constituents are increased; and as their elaboration requires the very highest effort of the vital powers, how is it possible to obtain more fibrin, out of which to manufacture new material to supply the lost parts, and without which an ulcer will not heal, without first obtaining an improvement of the general health? These inquiries seem natural, and a few years ago I would have said it could not be done; but I now know that it can. The difficulty originates in a mistaken view of the manner in which fibrin is produced, and where plastic lymph is elaborated. I shall not stop here to explain the process by which fibrin is made, but I will assert that plastic lymph is manufactured by the capillaries, and that they may be forced to produce it when there is hardly a vestige of fibrin to be detected in the blood; and hence the inference is, that it too is manufactured by them at the time when, and in the place where, it is wanted. By way of proving that "these things are so," and at the same time illustrating my method of treatment of chronic ulcers, I will detail a very interesting case in

point, which was treated in the State Hospital a few years ago. A young man by the name of Stalkup, of decided scrofulous predisposition, but who had never suffered from any of its open forms, received a kick from a mule on the outer side of the leg, a few inches above the ankle; the injured flesh sloughed out, and left an ill-conditioned ulcer, which all the domestic remedies that could be devised by his friends failed to heal; finally, a great part of the leg became involved, and his general health failed, so that it was thought advisable to send him to the hospital for treatment. But all efforts to arrest the disease proved abortive, until it was thought that amputation of the limb presented the only chance for saving his life. Professor Eve, who had the case in charge, called a consultation of the physicians who happened to be present, to witness a capital operation. All expressed the opinion that death in a very short time would inevitably take place unless the leg were removed, and were also nearly as unanimous in believing that the vital powers would give way under the operation. I suggested that if the immense drain from the ulcerated member could be restrained, so as to allow the system to recuperate a little under tonic treatment, it would increase the chances of the operation proving successful. Dr. Eve admitted this, but said the remedies usually resorted to in such cases had all been unavailingly tried, and inquired if I knew of any that would probably succeed. I replied that I believed so, and suggested the remedies, and my reasons for thinking they would prove successful. Dr. Eve then asked me if I would take charge of the case for a time sufficient to test the value of my suggestions, which I did. No change was made in the general treatment, for that, I thought, was about as good as any I could devise; local applications were alone depended on for altering the condition of the ulcer and checking the immoderate drain. The condition of the limb at this time was as follows: at least two-thirds of the leg, from the knee to the ankle, presented a loose, flabby ulcer; most of the soft parts had sloughed away, leaving the bone in places exposed; the discharge was prodigious, and was exceedingly

fœtid; the body greatly emaciated; countenance haggard; colliquative sweats, etc. A physician present remarked that he did not appear to have a particle of fibrin in his composition; of course this was not meant to be taken as strictly true, and yet it was evidently not far from the truth. I had chloroform administered so as to partly deaden his sensibility—for, notwithstanding the great want of capillary action, there was morbid sensibility—and then thoroughly washed the ulcer with the chloroform liniment, made less pungent by using three times the ordinary quantity of spirits of nitre, also adding a grain of sul. of morphia to the ounce; the leg was then lightly done up with the roller bandage, the lost parts being supplied by lint saturated with whiskey, which was also ordered to be occasionally poured upon the dressings. The first dressing had the effect of completely destroying the fœtor, and in forty-eight hours the discharge was lessened to a fourth of the usual quantity; the edges of the ulcer, from being pale and flabby, had become hard and slightly red, and in place of the bottom being covered with the results of broken-down tissue, there was evidently a secretion or exudation of *plastic lymph*. This favorable condition continued; and in the course of a week the improvement was so great that nothing further was said about an amputation. New material was rapidly formed for filling up and repairing the lost parts, and the condition of the whole system greatly improved; appetite and digestion became good; flesh again separated the skin from the bones; in short, general restoration took place, and that under the same general treatment under which he was before sinking. Now the main points in this case are, that it proved that fibrin is manufactured by the capillaries; and that, by proper stimulation, they can be made to furnish it at the particular part where it is wanted, and to make it, too, out of exceedingly poor blood.

This case went on improving until he became stout and able to take active exercise; the usefulness of the limb was restored so that he could walk very well with the aid of a stick to supply the deficiency occasioned by some of the

muscles being wholly lost; the limb became of natural size, but there was so large a surface to be covered with skin, that the process was protracted, and Mr. Stalkup got tired of waiting, and left the hospital to engage in some business; since which time I have lost sight of him.

The same general and local remedies are equally applicable and efficacious in that form of scrofula called *white swelling*. This disease, if taken at a very early stage, can be *aborted;* but if the inflammation is suffered to run on until it terminates in suppuration, the cure is slow and difficult; for as the pus is generally confined between the bone and its investing membrane, the periosteum, and as this membrane is dense and fibroús, and not easily cut through by the absorbents, much time often intervenes before the matter can find an exit. This confinement is the cause of much of the suffering usually endured in this disease. Now the reader must understand that the bones receive nearly all their blood, and are nourished by minute vessels extending into them from the periosteum; consequently, when this membrane becomes detached by a collection of matter under it, that part of the bone which received its nourishment from it necessarily dies, and finally exfoliates—that is, the absorbent vessels belonging to the sound part of the bone cut the dead part loose, and it then becomes movable, and often finds its way to the surface.

But this process is always carried on very slowly, and often takes years for its accomplishment; and though the violence of the suffering abates after the periosteum gives way under the ulcerative process, and the matter finds an outlet through the other tissues to the surface, and an opening is made by nature, or artificially, through the integuments for its discharge, yet the constant irritation which is kept up by the dead bone acting upon the surrounding tissues, prevents them from healing, and occasions an abundant secretion of pus, which, being usually of a bad quality, acts as a further source of irritation, and is a great annoyance to the patient by its filthiness and disagreeable odor. By these means the constitutional disorder is increased,

the blood impoverished, hectic fever set up, and the energies of the system exhausted, so that death often kindly puts an end to a life of suffering. But if the scrofulous depravation of the blood is not very great, and the patient be surrounded with circumstances of comfort, and such as are calculated to improve the energies of the system, the subject will often bear up under all these afflictions; may even grow and mature as other children; and when the dead bone finally becomes detached and discharged, the abscess may heal and no mischief remain, further than a shortening of the limb from retarded growth. Few cases, however, result so favorably; most commonly, even while the process of reparation may be slowly going on in the original seat of the disease, it extends to new portions of the limb, and other pieces of bone die and exfoliate; so that, while bony deposits may be made to supply the loss of one portion of the bone, the destructive process is going on below, or above, until in this way, in the course of years, almost the whole bone may be destroyed and escape, a piece at a time, and still something answering the place of a bone remain, though unshapely and unsightly.

Nothing more need be said with regard to general treatment in white swelling; it must be the same as in other forms of scrofula, except that it may be necessary to be longer continued; neither does the local disease require peculiar treatment, except with respect to the removal of the dead bone, which should always be accomplished as soon as it possibly can be done, for as long as this remains, no efforts can cause the ulcer to heal. The great difficulty is to get the dead part detached from the living; for bone having but few blood-vessels or absorbents entering into its composition, all the processes, whether of destruction or reparation, are very slowly carried on. But much, very much can be done by art to hasten the exfoliation or separation of the dead bone. By means of powerful stimulation as much can often be accomplished in a very few weeks as would otherwise require as many years. No stimulus with which I am acquainted possesses any thing like the same power of quickening the action of the vessels

concerned in the process of exfoliation as the *chloroform liniment.*

Three distinct objects must be kept in view in the management of these cases: first, to remove the general scrofulous condition, which has been sufficiently dwelt on; secondly, to bring up the action of the local parts to the healthy standard, so that they may be able to throw off the parts already dead, or too much diseased to be capable of restoration; and, thirdly, to remove these detached bones; and I think I can better illustrate my manner of fulfilling all these indications, so that the reader can fully understand it, by detailing cases, than can be done by preceptive teaching; and will, therefore, ask indulgence, should I be a little tedious in giving the history of a very interesting case which was successfully managed a few years since, and which will fully illustrate my method of meeting each of the above indications. This case is selected because of its suitableness, and because the gentleman who was the subject of treatment is pretty extensively known, and suggested that his case should be published for the advantage of others. J. W. Tolson, now a commission merchant of Mobile, Alabama, was attacked with white-swelling of the right thigh when about nine years old, which pursued the usual course described above; after continuing without any permanent amendment for about six years, it made its appearance also on the opposite arm, above the elbow; three years after this he came to Nashville and consulted the author, at the suggestion of his brother, Dr. L. S. Tolson, of Richmond, Miss.

Mr. Tolson presented the appearance and temperament thought to be peculiarly indicative of tuberculous tendency, viz., fair and clear complexion; large lustrous eyes; light sandy hair; sprightly and vivacious, but subject to spells of low spirits and great despondency; intellectual above the common order; ardent, and rather enthusiastic in his pursuits of either business or pleasure, etc., etc. His person was pretty well developed, and he would have been of over medium height, had not his stature been lessened by an arrest of the growth of the diseased leg, and a push-

ing up, as it were, of the pelvic bones of the sound side, occasioned by their having to sustain the whole weight of the body, at a time, too, when they were in a growing condition, and also preternaturally yielding in consequence of a lack of bony material common to young persons of the strumous diathesis. His general health was moderately good, and he ate and digested sufficient aliment to have sustained a full habit; but so much of the nutriment was expended by the enormous discharges which daily took place from the diseased limbs, that he remained lean, and had the general appearance of one who lacks nourishment. On examination, I found several fistulous openings in his leg, scattered along two-thirds of the space between the knee and the head of the femur or thigh-bone, each of which could be traced by the probe to dead bone; and, as some of these openings were found on each side of the thigh, it appeared as though the greater part of the bone was devoid of life, which ultimately proved to be the case. As Mr Tolson was naturally rather fastidiously nice in his feeling, he took great pains to avoid any show of the discharge upon his garments; and, besides a plentiful supply of lint and raw cotton, enveloped the limb with several yards of common domestic; yet all these would frequently become thoroughly saturated in a few hours, and had to be regularly renewed four or five times in the day. In his arm there were found three fistulous openings, two of which were a little below the head of the bone, and nearly opposite to each other, and the third within the lower half, nearest the elbow, showing that the greater part of this bone also, both in its length and substance, was dead, at least that the external surface was. The discharge from the arm was also immense, for besides saturating as much cotton and domestic as could conveniently be applied, several times in the day, a half pint, at least, would be each time emptied from a kind of pocket or sinus, which had been formed in the arm-pit or axilla.

Now although no dead bone had ever been discharged from the arm, as the probe could be made to grate upon its rough surface, it was known to exist; and, as nothing more

than small scales had been thrown off from the carious femur or thigh-bone, it was evident that the process of exfoliation was progressing exceedingly slow, if it was taking place at all. In the general treatment of this case, I depended exclusively upon the prescriptions already given, or what amounts to substantially the same thing, viz.: compound syrup valerian, [fever syrup,] and compound syrup sarsaparilla, each, eight ounces; iodide of potassa, one ounce. Dose, a dessert-spoonful after each meal. The chloroform liniment was exclusively depended on for correcting the fœtor, lessening the discharge, and hastening the separation of dead bone. It was freely injected into the sinuses three times a day; at first diluted with three times its bulk of water, but afterwards gradually used stronger. The general proceeding was, to first throw into the ulcers, by means of a half-pint syringe, as much castile soapsuds as was sufficient to cleanse them thoroughly, then throw into the sinuses as much of the stimulant as would fill them; over the fistulous openings, large pledgets of cotton, saturated with whiskey, containing an ounce of liniment to the pint, and over these the roller bandage, applied moderately tight, the whole to be kept saturated with the whiskey and liniment. The discharge was soon materially lessened, and considerable excitement gotten up in the diseased limbs, so that poultices of slippery-elm had occasionally to be applied at night, and a sufficient amount of epsom salts taken daily to keep down general febrile excitement, and also serve as a means of abstracting the surplus amount of fluids from the blood which had usually been discharged from the ulcers, and thus prevent any plethora or other damage from arising from so sudden a stoppage of such a considerable drain. The salts were sometimes taken in full purgative doses, but generally in small quantities in a large quantity of water, so as to imitate the water of saline springs, and, like that, operate by promoting an increased secretion from the kidneys; then, for a time, its use would be wholly suspended, just as evidence of fulness, or symptoms of weakness, indicated. By these means this immense drain, which had

continued for nine years, was gradually dried up without occasioning any of those untoward events which are usually enumerated as apt to follow the stoppage of a drain of long continuance. But the credit of this favorable result is not wholly, or indeed chiefly, due to the use of the salts; the alterative syrup did much more, by changing the morbid condition of the system, and promoting a vigorous exercise of the vital powers; in consequence of which, the material which was formerly thrown off in a crude state by the secreting surfaces of the ulcers, was now changed into a proper form for healthy nutrition.

In the course of a few weeks the beneficial effect of the stimulating injections became very apparent, as small particles and occasionally scales of bony matter were washed out by the soapsuds injections; finally, a large mass was ascertained, by examinations with the probe, to have become at least partially detached, and I thought it advisable to prepare a means of outlet; and not being fond of using the knife, I resorted to the dilating properties of slippery-elm; at first using a bougie made of this material for the purpose, just large enough to enter the fistulous opening which appeared to be nearest to the upper end of the loose bone, and by replacing this daily with one a little larger, in the course of ten or fifteen days the opening was sufficiently capacious to admit of a thorough examination. A very large piece of detached bone was ascertained to exist, and efforts were made to extract it by bringing its end to the opening, and twisting and pulling with strong forceps; but it would not come, and I requested Professor Eve to operate, by making a sufficient incision, which he kindly did, and found that a piece comprising more than one half of the entire thickness of the femur, and nearly half its length, had become detached, except at the end where it joined the condyle or large protuberance of the knee-joint; here no attempt at a separation of the dead from the living bone seemed to have been made, but they appeared to insensibly run into each other, so that it was impossible to determine where death reigned, or where life began. The connection was finally severed close to the joint; the sur-

face, however, showed that some unsound bone was still left; but it was thought best not to proceed any farther, for fear of injuring the joint.

As we availed ourselves of the advantages of chloroform, the operation occasioned very little sensible suffering; and as the loss of blood was trifling, no injury resulted from the operation, but a very great good was obtained, a large foreign body was removed, and the irritation occasioned by it got clear of. Water dressings were now used to keep down inflammation, and the sinuses injected, as before, with the liniment and whiskey. In a very short time the sinuses all closed by a healthy growth of granulations, or their sides adhered by a deposition of plastic lymph, and that only remained open which led to the condyle of the knee, at which point, we have said, there was some diseased bone left remaining. But pretty soon granules of bony matter appeared in the discharge, and the surface became evidently smoother, and presently blood flowed from it by the slight rubbing occasioned by an examination with the probe, giving satisfactory evidence that granulations had formed upon the surface, and that a cure was near at hand.

The treatment proved still more successful in the disease of the arm; for, soon after commencing the use of the stimulating injections, bone, in a state of disintegration, appeared in the discharge, or was washed out by the soapsuds injections; showing that a softening of the dead bony structure was taking place, and giving hopes that the whole might thus be got rid of, without our friend suffering the pain of an operation for its removal; and these hopes were not illusory, for after a few weeks the probe decided that granulations were forming upon the parts which had been divested of their periosteum, deciding that a cure was in progress. It thus proved, as was at first hoped, that only the outer surface of the arm-bone was altogether dead, and the liniment brought up the languishing action in the deeper parts to the healthy standard, and at the same time caused the dead pellicle to disintegrate, or become resolved into particles, so that it could be forced out by the washings.

As soon as this bony matter ceased to appear, and the

parts that could be reached by the probe were found to be well covered with granulations, a compress was laid over the course of the sinuses, and the roller bandage applied sufficiently tight to bring the sides of the cavities together, so that they might become joined by means of the plastic lymph which was now abundant in the discharges. Adhesions were soon formed, and all evidence of disease removed from the limb.

In about four months from the commencement of treatment, Mr. Tolson left for his father's home, near Choctaw Station, Miss., in fine health, and as clear of any evidence of the terrible disease under which he had labored for nine long years as he was before he was afflicted, except the shortening of the limb referred to, and a very small sore near the knee-joint, which soon after disappeared.

During the progress of the disease, Mr. Tolson, having obtained a situation in the Baptist Publishing House temporarily, did full service as clerk and book-keeper most of the time, and thus prevented time from dragging heavily, and more than cleared his expenses, including doctor's fees.

It is now over three years since the cure was effected, and I learn that it still proves to be radical. A few weeks since, the author had a communication from him, in which he says: "My old disease has now been well over three years. It has, during that time, made a few slight attempts at returning, but has subsided of itself, or been removed by the efforts of nature."

The points of interest in this case to a *physician* would be, that it shows, contrary to currently received opinion, that the process of exfoliation may be artificially hastened, and that in a remarkable degree—making weeks stand for years, and even more than that—and that thin portions of dead bone may be made to disintegrate, and come away in granules with the other discharges. To the masses it is interesting by showing that this formidable disease can be *cured*—a matter that is doubted by many; and it is peculiarly interesting to the nurse, as it serves admirably to point out the manner in which such cases can be successfully man-

aged. Many similar cases could be given, but it is not thought necessary to task the reader any further.

An inquiry might naturally arise here, whether, after a scrofulous disease has been thoroughly cured, and the scrofulous condition fully removed, as in the above case, a taint will still remain in the system which can be communicated to posterity. Our opinion is, that no greater probability exists of the offspring of such person inheriting the predisposition to tubercular or strumous diseases than of those born of members of the same family in whom the disease had never been manifested, or even less probability, for the constitutional remedies appear in many instances not only to remove the scrofulous condition, but also the predisposition, so that no strumous taint is left; and, as has before been said, "like begets like," and it is not the likeness of what the parent once was that is communicated, but that which obtains at the present. Hence, the first children of scrofulous or tuberculous parents rarely inherit the predisposition; but those that are born after the disease has been fully developed, often have the disease in actual form at birth.

PHTHISIS—CONSUMPTION.

Tubercular phthisis, or pulmonary consumption, is a constitutional disease, manifesting itself chiefly by certain changes in the lungs.

Pathology.—The origin and formation of tubercle has already been considered in the section on Tuberculosis. It is only necessary to mention, therefore, that in phthisis the tubercular deposit takes place in the areolar tissue between the air-cells, in the air-cells themselves, and in the smaller bronchial tubes communicating with them, and that wherever a speck of this matter is deposited from the blood, it continues to increase by constant addition. In its hard state, it is called crude tubercle. After a time, inflammation arises in the pulmonary substance surrounding the deposit, suppuration occurs, the tubercular matter softens and breaks down, and at length is gradually expelled through the bron-

chi, trachea, and mouth, leaving cavities or excavations behind of various sizes. Sometimes these cavities close and heal; more frequently tubercular matter continues to be deposited on their sides, and in other parts of the lungs, until these organs become diseased to an extent incompatible with the continuance of life.

Symptoms.—The general symptoms of phthisis are cough, hæmoptysis, debility, expectoration, dyspepsia in some form or other, acceleration of the pulse, slight dyspnœa, loss of flesh, hoarseness, sweating, and diarrhœa. A mark at the reflected edge of the gums, usually deeper in color than the adjoining surface, and producing a festooned appearance by the accuracy with which it corresponds to the curve of the gingival border, has been observed to be very frequently present in these cases. Sometimes, especially in males, fistula in ano is one of the earliest symptoms. The disease ordinarily sets in with a short, dry cough, which the patient often refers to the trachea. It is doubtless due to tubercular deposit irritating the bronchial membrane; it may continue some time without being aggravated, or without the supervention of any other symptom. Occasionally there is hæmoptysis, which, recurring at variable intervals, gives the first intimation of the disease. The hemorrhage may be so considerable as to kill *directly* or *indirectly*. The patient complains also of languor; slight exertion, ascending a hill, or going up stairs, causes fatigue, hurries the breathing, and often gives rise to palpitation; the uterine functions are more or less disturbed in women, and the liver becomes congested and tender. When this state has lasted for some time, during which the cough and expectoration have been increasing, hectic fever appears. The debility becomes more marked; the countenance becomes frequently flushed; chilliness is complained of in the evening, while on awaking in the morning the body is found bathed in a profuse sweat, and there is loss of appetite, with thirst, etc. The patient now rapidly loses flesh; diarrhœa—either due to disordered secretions, or to ulcerations of the mucous membrane of the ileum and colon—often sets in, and increases the debility; the urine is found sometimes to contain albumen, and occasionally minute

quantities of sugar; the lower extremities frequently become painful and œdematous, and death soon ends the scene, the mental faculties remaining clear until the last few hours.

Diagnosis.—Some authors have divided phthisis into three stages. During the *first*, that in which tubercles become developed in the lungs, neither the local nor the general symptoms warrant us in announcing the presence of any other affection than severe catarrh; if the tubercles be deposited, however, in considerable quantity, the sound on percussion will be dull, the act of expiration will be prolonged, from impairment of the elasticity of the lungs, and *bronchial respiration* and *bronchophony* will be heard; the vesicular murmur will be feeble or even absent. In the *second* stage, the tubercles increase both in number and size, so as to compress and obstruct the substance of the lung, and occasion dyspnœa; *large crepitation* will be distinct, and in the sound lung *puerile breathing*. In the *third* stage, the tubercles become softened; they make an opening for themselves through some of the surrounding or involved bronchi, and being thus evacuated, they give rise to the formation of cavities. Auscultation now elicits a peculiar sound, called *gurgling*, caused by the bubbling of air with the pus or mucus contained in the cavity. Gurgling, it must be remembered, may also arise from that rare disease, circumscribed abscess of the lung, as well as from the mixture of air with liquid in a dilated bronchus affected with chronic inflammation. When the cavity contains no liquid, we hear *cavernous respiration;* if it be large, *amphoric resonance* and *pectoriloquy* will also be distinguishable. Notwithstanding the existence of one large or of numerous small cavities, percussion almost invariably affords a dull sound, owing to the layer of lung forming the wall of the cavity being dense and solid.

Causes, etc.—Phthisis may be inherited or it may be acquired; it is not contagious. Of 1000 cases, collected by Dr. Cotton, at the Consumption Hospital, 367 were hereditarily predisposed; 582 were males, and 418 females. The left lung suffers more frequently than the right; in Dr. Cotton's cases, the left lung was affected in 455, the right

in 384, and both in 161. The apices and posterior parts of the upper lobes of the lungs are ordinarily the situations in which the deposit first takes place.

No period of life is exempt from this scourge; according to the Registrar-General, half of the deaths that happen on an average in London, between the ages of twenty and forty, are from consumption and diseases of the respiratory organs. About one in five die of consumption in our Northern States; in the South, not quite so many. Insufficient and bad food, impure air, the dirty dust suspended in the air which the people of cities have to breathe, confinement, deficiency of light, and immoderate indulgence of the sensual passions, may be regarded as frequent causes. Its ordinary duration varies from about six to twenty-four months; it very rarely proves fatal in less than three months, unless indirectly from severe pneumonia or pleurisy.

Treatment.—This resolves itself into that necessary for the prevention of phthisis, and that to be adopted to stay its course when it has once developed itself. As regards prevention, I need only refer to the observations on Scrofula, as the remarks there made apply with equal force to the disease under consideration.

When the disease is present, when tubercles have become developed in the lungs, we must endeavor to *improve the general nutrition*, by attention to the quantity and quality of the food, by pure mild air, by warm clothing, and by the administration of cod-liver oil. As regards the diet, only the most nutritious food should be allowed; an animal diet is absolutely necessary, so long as the powers of the stomach and alimentary canal are sufficiently strong to digest and assimilate it. When the powers of the digestive organs fail, pepsine, in doses of gr. xv., with the two principal daily meals, should be ordered. Milk is also very nutritious, and so are raw eggs. Strong broths, a small allowance of wine, or of good bitter ale, may often be advantageously permitted. Too long an interval should not elapse between each meal.

Change of air and scene is an important element in the treatment; though it must be remembered that this change is to be resorted to only in the early stages; for it is cruel

to send patients away merely for them to die. When softening of the tubercles has begun, it will be too late to expect much benefit.

Cod-liver oil, particularly the brown variety, is a most valuable remedy: it nourishes the body; diminishes the cough, expectoration, and night-sweats; and, there is every reason to believe, checks the fresh exudation of tubercular matter. In the beginning, a teaspoonful should be given twice or thrice daily, and gradually increased to a tablespoonful three times a day. Where the stomach will not tolerate this agent, enemata containing it may be tried; or it may be introduced into the system by inunction, or rubbing it on the surface, and by applying lint saturated with it to the chest.

The various preparations of *iron* are very useful in many cases; especially during the first stage of the disease, provided there be neither hæmoptysis nor pulmonary congestion. *Iodine* and its compounds, especially the iodide of potassium, have been highly praised; the iodide of iron is the best preparation. *Liquor potassæ* is often useful in the early periods, particularly when combined with bark. When the cough is severe, small doses of opium or morphia, frequently repeated, give relief; when there is troublesome hæmoptysis, the oil of turpentine, five drops every hour, often checks it, or the acetate of lead may be tried; when the heart's action is irritable, it may be controlled by hydrocyanic acid, with or without small doses of digitalis; if the night-sweats weaken and annoy the patient, they may often be checked by gallic acid, or by the mineral acids with bark, or especially by the oxide of zinc in four-grain doses at bedtime; while the diarrhœa, when urgent, must be stopped by catechu, logwood, or opiate injections. Counter-irritation to the chest by sinapisms, turpentine stupes, and particularly by the tincture, often gives relief. Pyro-acetic spirit or naphtha has been highly but undeservedly praised, since it more frequently does harm than good; and the same observation applies to arsenic, oxalic acid, phosphate of lime, oxygen gas, blisters, dry-cupping, daily emetics, and a host of similar and dissimilar remedies.—*Tanner.*

The results of my own practice in true pulmonary consumption have not been very satisfactory. I have, however, had good reason to believe that, taken in the early stage, the treatment which I have recommended in scrofula, together with constant pustulation of the chest with emetic tartar or croton oil, has frequently arrested the development of the disease; and in later stages, the same treatment, with the addition of an opiate at night to insure undisturbed rest, has done much toward warding off the fatal result, and rendering life more comfortable while it lasts.

But though little can be done in the present state of knowledge towards a cure, much may be accomplished by way of prevention. We will, therefore, give the reader the benefit of the best we know upon this important subject. Pulmonary consumption, or rather a predisposition to it, all authority agrees is frequently inherited from one or both parents, and it looks reasonable that it should be; for as we perceive children to resemble their parents in the features of their face, and in the disposition of their minds, so there can be no doubt that they also resemble them in the internal organization of the body, on the peculiar structure of which a predisposition to future disease must necessarily depend; and that children are in fact liable to the diseases of their parents, we have manifold and decisive proofs. How frequently do we see a person, at a certain time of life, so much resemble what a father was at the same period, that he seems to fill the identical place in society that the former occupied! In like manner, at certain periods of life, do children become liable to the diseases of their parents, and consumption, gout, or dropsy makes its appearance, the germs of which must have lain in the system from the earliest period of existence, although they did not disclose themselves till their due season. Not only do we see that children are peculiarly prone to the diseases of that parent to whom they bear the greatest personal similarity, but as we occasionally perceive the resemblance of some more remote ancestor break forth, as it were, in a family, so we shall find the constitution and

diseases of that child differ from those of its immediate parents, and partake rather of the nature of the progenitor whom it most resembles.

These circumstances are thus particularly noted, because it is only in cases where the predisposition to this disease is suspected at a very early period of life, that the means of prevention can be employed with any reasonable prospect of success. For the same reason, also, I am desirous of attracting the attention to a point of similarity between parents and children which has not hitherto been sufficiently attended to. The form and structure of the nails of both extremities afford an excellent criterion to enable us to judge which of the parents the offspring most resembles in constitution. I have known the peculiar structure of a toe-nail designate certain individuals of a family for several successive generations. Although these parts of the human body do not make their appearance earlier than about the sixth month of the fœtal age, they indicate very decidedly the predominant influence of the parent whom the child most resembles in constitution. It is also a curious fact that the horns of animals, which often do not appear till several months after birth, afford the best criterion for distinguishing the peculiar breed or race, to those who are conversant with such subjects.

But certain peculiarities in the structure of the nails afford also a strong indication of the propensity to phthisis. In forming an opinion concerning the probable future occurrence of this disease, the nails ought always to be carefully examined and compared with those of the parents. If these parts of the body are large, of an oblong shape, of a smooth texture, and a pink color, curling over the tips of the fingers, the last joint of which is commonly somewhat enlarged, there is much reason to suspect a phthisical tendency. If, moreover, we find a slender conformation of the body, fine skin and hair, a shrill voice easily rendered hoarse, hollowness of the temples, sound teeth, and an expanded pupil of the eye, there is little doubt that a person so constituted will, at some future period of life, become the victim of pulmonary consumption.

The aggregate of these appearances constitute what is termed delicacy of constitution. This habit of body is frequently accompanied by superior powers of mind. Individuals, indeed, who seem almost to approach the perfection of our species, are peculiarly marked as the victims of pulmonary consumptions. This fact not only furnishes a strong motive for endeavoring to prevent the first attack of affections of the lungs, but affords also some grounds to encourage the expectation of success. Soundness of teeth, a marked concomitant of the phthisical habit, is commonly considered as one of the surest signs of a sound constitution. A variety of examples might also be adduced of persons who, after having subdued, by regimen and medicine, phthisical symptoms with which they were threatened in their youth, have protracted existence to a very advanced period of life. As the propensity to this disease must necessarily be the result of a certain combination of habits, continued perhaps from one generation to another, combined with the peculiar circumstances in which the individual is placed, it is reasonable to suppose that, by altering the former, and counteracting the latter, the general constitution might be changed.

Pulmonary consumption is a disease almost peculiar to a certain zone of northern latitude, in which our Northern States are included. A little farther to the north, or to the south, the ravages of these complaints are comparatively trifling. The only natural cause to which this can with propriety be attributed, is the fluctuation of our atmospheric temperature between the confines of heat and cold. The increased frequency of pulmonic complaints, which has accompanied the more general diffusion of wealth, and consequent habits of luxurious living, in this country, affords, I think, sufficient proof that tender and indulgent treatment is not the best means of obviating them. What are the classes of mankind most susceptible of, and most injured by, the impressions of heat and cold? Precisely those who are least exposed to their influence. Sedentary artificers, who necessarily pass their days in close and heated chambers, are swept off in unaccountable numbers

by pulmonary consumption; while sailors, ploughmen, butchers, and all persons whose occupations lead them to be much in the open air, enjoy a comparative immunity from the attack of this disease. Among the aborigines or native inhabitants of this country, Doctor Rush informs us that pulmonary consumption is unknown; but in proportion as they adopt the arts and manners of civilized life, do they become liable to the fatal influence of this complaint.

When a wealthy parent sees a delicate child shiver at the freshness of the breeze, a natural tenderness leads him to avert this unpleasant feeling by the means he can most readily command, close apartments and warm clothing. But he thus augments that very delicacy of constitution he should endeavor to counteract. The variations of atmospheric temperature are most sensibly felt by those who are cased in the thickest clothing; as plants reared in the hot-house are least able to bear the blasts of winter. Contrast the leaden-colored visage and the chilblain toes and fingers of the puny school-boy, shivering and crawling along the street in a winter's day, with the appearance of the country lad of equal years, employed all day in following the plough; the surface of his body, in place of being chilled by the cold, is roused to a state of increased vascular action, his countenance glows with the genuine hue of health, and his whole frame bespeaks elasticity and vigor.

Surely from this example we might be taught the most effectual method of averting delicacy of constitution, being careful to modify the means according to the object we have to operate upon. Let the child whose wealth can command, and whose future existence is of sufficient importance to justify such attention, reside in a part of the country where the water is good and the air pure. Let him be abroad all day, and during every kind of weather, provided he is employed in active exercise; let him be guarded against suddenly approaching or sitting much over the fire, even in winter. Let the habit of retiring early to bed, and leaving it early in the morning, be strictly enforced. Let him wear no more clothes than are requisite to guard against cold, and plunge into the sea, or a river,

daily, during the three warmest months of summer, and sponge the body with cold water every day of the balance of the year. The phthisical habit is, in general, attended by a precocity of intellect, which it is of more importance to check than to encourage. In such instances the improvement of the mind should be considered as a secondary object, and may well be postponed till a certain share of robustness of constitution has been insured. This kind of corporeal education is obviously incompatible with the usual discipline of schools, whether private or public, and can only be advisable where the importance of the object justifies the various sacrifices that must be made in order to attain it.

But precautions against this insidious disease are rarely had recourse to at so early a period of life. The buoyant spirits and active propensities of its destined victims rarely excite suspicion either in themselves or their friends of the approaching mischief. As the age of puberty approaches, other indications of the propensity to phthisis are developed. The narrow and elongated form of the chest becomes more apparent, and is chiefly indicated by the prominence of the shoulders, which stand out from it on each side somewhat like wings. A broad deep chest, the transverse section of which approaches the circle, affords the best criterion of a healthy and vigorous conformation of the body, not only in man, but in all kinds of quadrupeds which are subservient to his wants. For the support of life it is necessary that nearly one-half of the blood should circulate through the lungs in the same time that the remainder passes through the rest of the body. But if the lungs are prevented from expanding to their proper magnitude in consequence of being confined within the limits of a narrow thorax, their proper blood-vessels must be proportionably diminished in number as well as dimensions, and on any sudden push of blood, their coats, already over-distended, must be prone to rupture. At this period of life, too, there is evidently an effort of the constitution endeavoring to expand every part to a state of full perfection.

This is evinced by frequent discharges of blood from the nose. The vessels of that part readily heal, but an accident of the same kind taking place in the lungs, not unfrequently lays the foundation of consumption.

This temporary fulness of blood should be counteracted, by strictly adhering to a diet of the farinacea and ripe fruits. Animal food and fermented liquors ought to be rigidly prohibited. Even milk often proves too nutritious. Exercise should be regular but gentle. Sudden and violent exertions are extremely hazardous. Riding on horseback is preferable to any other kind of exercise. Such efforts of the voice as are required in singing or playing on any wind-instrument of music, frequently produce discharges of blood from the lungs; but the practice of reading and reciting for some time together in a moderate tone of voice, tends to strengthen these organs, and to diminish the danger of pulmonary hemorrhage from any sudden exertion.

During the circulation of the blood through the lungs, a principle necessary to the support of life is absorbed from the air; and various matters, the longer continuance of which in the body would prove noxious, are also discharged in the form of vapor or gas. That there is, besides, no inconsiderable quantity of aqueous fluid secreted and discharged from the lungs, every person must be convinced who has attended to the deposition of watery particles that takes place from the breath in a frosty day. Of the whole quantity of perspirable matter discharged from the surface of the body in any given portion of time, that exhaled from the surface of the lungs may be estimated as amounting to one-third. The skin and the lungs being both secreting surfaces, must also be considered as organs mutually compensating or balancing each other. If the skin be suddenly chilled, a larger share of perspirable matter will endeavor to escape by the lungs, as being an internal, and therefore a warmer surface. It is not surprising that this effort should, in a delicate organ, be productive of derangement and disease, and accordingly we daily hear people dating their first attack of pulmonary complaints from sitting in a

cold place after having been over-heated, from being thoroughly soaked with rain, or from cold-bathing in an improper state of the system.

The purpose of these observations is to enforce the propriety of maintaining cutaneous perspiration, and endeavoring to render the surface of the body less susceptible of atmospheric variations. In persons of a phthisical habit, the skin is in general either dry and deficient, or clammy, both of which conditions betoken scabrous perspiration. The most efficient means of removing this morbid state of the surface of the body is the sedulous use of cutaneous friction. Why a practice on which the ancient physicians placed so much dependence, not only for the cure of many diseases, but in a preëminent manner for the preservation of health, should have in modern times fallen so much into neglect, it is not perhaps easy to account; although at present nothing seems to be considered as medicine, except what is taken into the stomach; as if the due regulation of air and exercise did not furnish means of recovery, at least as efficacious as drugs.

Cutaneous friction is most advantageously performed by means of a flesh-brush. To be of any essential use, this instrument ought to be of a much harder texture than those commonly offered for sale. The most favorable season for this practice is not immediately on getting out of bed. There exists a sensibility of the skin at that time which renders the application of the brush painful and unpleasant. After the customary diurnal evacuations of the bowels has taken place, the person should strip, and applying this instrument to various parts of the body in succession, commencing with the chest, continue the friction till a universal redness and glow takes place over the whole surface of the body. The temporary exposure of the naked body to the air of the chamber during this operation, accustoms the skin to a certain variety of temperature, while any danger of taking cold is completely obviated by the exercise, as a person ought always, if his strength permit, to rub himself. Though somewhat painful and irksome at first, this operation, like all the rest of our active habits, generally becomes

pleasant, and at length necessary, so that a person accustomed to it feels himself uncomfortable if he has omitted for a day his usual exercise.

From regularly persevering for some length of time in this practice, I have observed a very obvious alteration produced in the texture of the skin. It appears to acquire thickness, and to become mellow and pliable—a condition very different from that of persons disposed to phthisis, whose skin is commonly thin and harsh. The muscles also seem to derive firmness from this practice. The brush will also be found daily to remove no small quantity of furfuraceous matter, which, whether it be inspissated perspiration adhering to the surface or particles of decaying cuticle, is certainly better away. This practice also removes every kind of roughness and asperity from the surface of the skin, which becomes beautifully smooth and polished, so that even as a cosmetic, having no tendency to impair health, cutaneous friction may be advantageously employed. After exposure to wet, to strip and rub the surface of the body till it glows, is unquestionably the best means to prevent taking cold.

I do not presume so strenuously to recommend friction of the skin as a means of supporting the healthy action of the external surface of the body, and of promoting cutaneous perspiration, without having witnessed remarkable changes for the better, produced in the constitution by adopting and persevering in this practice. Indeed, I am disposed to attribute much of the benefit derived from exercise on horseback, as well as the good effects of a sea-voyage toward a mild climate, to the increase of perspiration produced by these modes of gestation.

Every person suspicious of predisposition to pulmonary consumption ought at all times, but especially in cold weather, to wear a quantity of woollen clothing sufficient to obviate any approach to the perception of chilliness; independently, however, of the actual presence of obstinate hoarseness or cough, I am disposed to think that the requisite quantity of flannel is more advantageously worn over the usual shirt than in immediate contact with the skin.

The possibility of communicating this disease by contagion is a point that has been much agitated. As a measure of precaution, the delicate ought to decide this question for themselves in the affirmative. Exhalation from the lungs is the mode by which infectious diseases are most generally propagated; and from analogy, we might infer that air impregnated with the effluvia of these organs in a state of ulceration would have a tendency to excite diseased action of a similar kind if received into the lungs of a person previously disposed to this complaint. I have seen more than one instance of a husband who appeared to have no previous disposition to consumption being affected with a distressing cough, which continued to harass him for months while his wife was lingering under that disease. On one melancholy occasion, I witnessed the successive deaths of three young ladies, two of whom, in my opinion, decidedly caught the disease in consequence of their sedulous attention, during the progress of the indisposition, to her who was first affected, who evidently was of phthisical habit, which was not apparent in either of the others.

If the presence of the symptoms which have been already described as characterizing this disease renders its existence no longer equivocal, the person so affected ought, without delay, to migrate toward a warmer climate. Should circumstances render this expedient impracticable, the next best plan a phthisical person can adopt is to remove into a low and rather damp situation. The fatal event of pulmonary consumption is uniformly accelerated by residing in an elevated region. There are even instances on record of phthisis making its appearance in families, previously unaffected by it, on changing their place of residence from a level to a hilly country. In Holland, pulmonary consumption is a disease of comparatively rare occurrence. The same situations that predispose to ague are unfavorable to the attack of phthisis, as if these two states of the constitution were incompatible with each other. The physicians of ancient Rome were accustomed to send their consumptive patients to the low and marshy land of Egypt. Cicero, the celebrated orator, who in his youth was threatened with

consumption, as the hollow temples and sharp features of his remaining busts abundantly testify, travelled into Egypt for the recovery of his health.

CARCINOMA, OR CANCER.

General Observations.—There is scarcely an organ or tissue in the body which may not be attacked by this malignant and terrible disease. It occurs most frequently in women, on account of the liability of the breast and uterus to be affected by it; otherwise, it would seem to be more common in men, since the skin, bones, and digestive organs are more prone to it in the male than in the female sex. It is very uncommon in children; when it occurs in them, it is generally located in the bones or in the eye, or, very rarely, in the testicle.

A cancer may be described as a local manifestation of a specific disease of the blood, having incorporated in it peculiar morbid materials which accumulate in the blood, and which its growth may tend to increase. As it is of constitutional origin, so the removal of the local manifestation does not effect a cure; but the cancer returns either in the seat of the original disease, or in some other parts. Moreover, when the primary affection has existed for a variable period, secondary deposits are very apt to be formed in the lymphatic glands, lungs, liver, spleen, etc. Although the tendency of cancer is to increase constantly and rapidly until life is destroyed, yet in a very few instances it becomes latent; that is to say, after it has reached a certain line of development, it remains in a state of quiescence, neither advancing nor receding. Sir B. Brodie refers to a case where the cancer was quiescent for twenty-five years; Dr. Babington knew an instance in which scirrhus of the mamma [breast] was stationary for twenty-four years; and Sir Astley Cooper attended two women in whom the period of latency was respectively seventeen and twenty-two years. Equally rare is the spontaneous cure of cancer by inflammation, ulceration, and sloughing, or by fatty or calcareous degeneration; yet it is certain that nature has by these means effected at least temporary if not permanent cures.

If any cancerous growth be minutely examined, it will be found to consist of a peculiar formation called nucleated cells, or "cancer cells," and of their free nuclei or central portion; and a milky fluid or semi-fluid mixture termed "cancer-juice." The cancer cells and juice are either infiltrated into previously healthy tissues, or they are contained in a stroma or bed of new fibrous tissue. The cancer-cells are of various shapes, being round, oval, fusiform, triangular, or elongated into one or more sharp processes; they vary in size from the $\frac{1}{700}$ to the $\frac{1}{2000}$ of an inch, the medium being $\frac{1}{1000}$; and they chiefly resemble, in structure and aspect, the secreting gland-cells. On magnifying a specimen of scirrhus about two hundred diameters, the cells will be seen containing a comparatively large, regular, oval or round, and well-defined nucleus; sometimes two nuclei exist in the same cell; and each nucleus has one or two nucleoli. Moreover, mingled with these cells we find free nuclei, and numerous degenerated cancer-cells; some of these cells appearing withered and full of oil-globules, others being transformed into granular matter, in the *debris* of which the nuclei lie loose.

Varieties of Cancer.—There are three principal varieties of malignant disease: they are, Scirrhus, or Hard Cancer; Medullary, or Soft Cancer; Epithelial, or Skin Cancer.

Scirrhus, or Hard Cancer.—This is the most frequent form of cancer. It is seen occasionally in the stomach, in the upper part of the rectum, and elsewhere; but most frequently, by far, in the female breast.

In the breast it is found as an infiltration, affecting part or the whole of the mammary gland. The diseased mass is extremely hard, correspondingly heavy, and inelastic; the increase in size is not great, for the part of the gland affected is not much larger than it was in health. After a variable period, the tumor, with the proper tissues of the breast in contact with its surface, and the skin, which is often adherent to it, ulcerates; a foul, excavated, spreading ulcer, with everted edges, being formed; from which there is a constant sanious discharge, and very often attacks of

hemorrhage. The ulceration sometimes extends from the skin inwards; sometimes from the substance of the cancer outwards. The amount of suffering varies; occasionally the pain is very slight, but generally it is severe, lancinating, and most exhausting.

As the local disease advances, the health fails, and the cancerous cachexia becomes fully established. This condition has been well described by Sir Charles Bell: "The general condition of the patient is pitiable. Suffering much bodily, and every thing most frightful present to the imagination, a continual hectic preys upon her, which is shown in increasing emaciation. The countenance is pale and anxious, with a slight leaden hue; the features have become pinched, the lips and nostrils slightly livid; the pulse is frequent; the pains are severe. In the hard tumors the pain is stinging or sharp; in the exposed surface it is burning and sore. Pains, like those of rheumatism, extend over the body, especially to the back and lower part of the spine; the hips and shoulders are subject to those pains. Successively the glands of the axilla, and those above the clavicle, become diseased. Severe pains shoot down the arm of the affected side. It swells to an alarming degree, and lies immovable. At length there is nausea and weakness of digestion. A tickling cough distresses her. Severe stitches strike through the side; the pulse becomes rapid and faltering; the surface cadaverous; the breathing anxious; and so she sinks."

Scirrhus of the breast is very rare in men; it occurs in women most frequently between the ages of forty-five and fifty.

Records, made by M. Paget, of 139 cases of scirrhus of the breast, watched to their conclusions, or to their survivals beyond the average duration, give the following results: In 75 not submitted to operation, the average duration of life after the patient's first observation of the disease, has been 48 months. In 64 submitted to operation, and surviving its immediate consequences, the corresponding average has been a little more than 52 months.

The longest duration of life in the former class has been 216 months; in the latter class 146; the shortest in the former was 7 months; in the latter 7½.

Medullary, or Soft Cancer.—Medullary, or encephaloid, or cerebriform or brain-like cancers are of two kinds—soft and firm; the former being the most frequent. In either condition they are found in about equal proportion as separable tumors or as infiltrations. As *separable* tumors, when occurring in the testicle, the breast, the eye, the intermuscular and other spaces in the limbs; as *infiltrations*, when occupying the substance of the uterus, the alimentary canal, the serous membranes, and the bones. In either form their course towards a fatal career is rapid, the average duration of life, from the patient's first observation of the disease, being little more than two years; moreover, they occur at an earlier age than other kinds of cancer, being sometimes met with before puberty. The *soft medullary tumors* are commonly round or oval, and present to the touch a sense as of the fluctuation of some thick fluid, so that the most experienced are often deceived. They are very vascular; the material composing them resembles brain substance, partially decomposed and broken up; they yield abundance of cancer-juice on being pressed or scraped; and they frequently contain extravasated blood. The *firm medullary cancers* are elastic and tense, but not hard, like scirrhus; in their shape and size they resemble the soft; they may possess distinct investing capsules, or they may extend into the substance of organs.

Epithelial Cancer.—Some difference of opinion exists as to whether this disease is really a form of cancer, or whether it is not an affection *sui generis*, consisting of an infiltration of cells of scaly epithelium, with a serous liquid different from cancer-juice. Hence some authors speak of it as "epithelioma," or as "cancroid" affection. In its clinical history, however, it resembles cancer; inasmuch as it returns after being removed by operation, it is prone to incurable ulceration, it affects the lymphatics seated near it, and it destroys the patient; but it is peculiar in two respects—it is very little liable to multiplication in internal

organs, and it appears often to be produced by local causes only. As pathologists seem divided upon this question, it will be better to treat of it in this place as if it were undoubtedly a true form of cancer; a plan which has at least this recommendation, that it is adopted by Mr. Paget.

This disease is generally located in or beneath some portion of skin or mucous membrane, its most common seats being the lower lip, the tongue, the larynx, the nymphæ, the labia majora, the cervix and lips of the uterus, and, in chimney-sweeps, the scrotum. True, "cauliflower excrescence of the uterus" is in all probability always a variety of epithelial cancer, commencing on the surface of the os uteri in the form of small papillary or villous eminences, which, by their growth, expansion, and branching, take on the peculiar cauliflower appearance. It is a rare disease.

Epithelial cancer is generally thought to occur oftener in the male than in the female sex. It is most common after the age of 50. When once established, it gradually progresses to destroy life, but more slowly than medullary cancer; rather less than four years being the average duration of life from the commencement. Its malignancy seems greater when it is seated on the tongue or on the penis, than when on the scrotum or the lower extremities; and the removal of the disease by operation probably gives a better chance of recovery than the excision of any other variety of carcinoma. The essential character of this disease is, that it is composed for the most part of cells resembling—according to some authors, identical with—the tessellated or scaly epithelium lining the inside of the mouth; these cells being infiltrated, together with a juice or serous fluid, into the interstices of the affected tissues.

Causes of Cancer.—With regard to the causes of this disease, but little is known. All classes of society are equally subject to it; the rich and poor, the idle and industrious, the gay and the melancholy, all suffering from it in equal proportions. The only known predisposing causes are thus summed up by Dr. Druitt: 1. "*Descent* from a

cancerous parent, which seems to have some slight influence, and was found by Lebert to exist in about one-seventh of a certain number of cases. 2. *Sex*, for cancer is at least from one-third to one-half more prevalent in the female. 3. *Age*, because nearly half of the entire number of cases occur between forty and sixty. Lastly, Although cancer is not contagious in the ordinary sense of the term, there seems reason for believing that, if fresh cancer-cells are introduced into the blood, they may be deposited and propagate themselves. The experiment has been tried on dogs by Langenbeck and by Lebert, and cancerous tumors were found in various parts, when the animals were killed some time afterwards; yet it must be remembered that some of the tumors found in these cases may have existed before the inoculation." From all this, it is evident that our knowledge of the causes of this disease is very slender. In the great majority of cases the patient is unable in any way to account for its origin; very frequently—in scirrhus of the breast especially—the tumor is only discovered by accident; and it is almost certain that mental anxiety, peculiar temperaments, particular occupations, injuries, etc., have nothing to do with producing the cancerous diathesis. In listening to the histories of patients afflicted with cancer of the uterus, I have been struck with the frequency with which they have told me of the loss of one or more of their relatives from phthisis. The same circumstance has been noticed by Mr. Zachariah Laurence, who seems rather inclined to entertain the opinion that there may be some connection between the two diseases.

Treatment of Cancer.—The treatment of cancer is at present—as far as I positively know—in just the same unsatisfactory condition as was that of phthisis only a few years ago. But inasmuch as we have every ground for believing that well-marked cases of pulmonary consumption, which would have been regarded as utterly incurable ten years since, are now sometimes restored to health by the aid of medicine; so we have every reason to trust that at no distant day cancer may be made to yield to some remedy or combination of remedies, yet to be discovered. In the

meantime much may be done to relieve the patient's sufferings, and to prolong life.

Palliative Treatment.—The great indication is to keep up the constitutional powers to as near the standard of health as the disease will allow, by tonics, nourishing food, pure air, warm clothing, great cleanliness, mental occupation, and by preventing or relieving pain, and, if possible, prevent the sufferer from applying to those callous charlatans who will make the most solemn assertions of their ability to cure him, until he either sinks into the grave, or has expended every dollar that he possesses. Moreover, it is our duty to make every effort to give even temporary relief; for, as Bacon has well said, "I esteem it the office of a physician, not only to restore health, but to mitigate pain and dolors, and not only when such mitigation may conduce to recovery, but when it may serve to make a fair and easy passage."

The best means to adopt in addition to all known hygienic measures for the maintenance of the general strength are, first, to do all that is possible to relieve pain; which may be done either by the administration of opium, conium, or henbane, or by the application of intense cold. By this alone much good may be affected; but we must, secondly, try to improve the blood by ferruginous tonics, and by the use of the most nutritious kinds of food. Wine, beer, milk, and different varieties of animal food, must be freely given; bark and cod-liver oil will often be valuable; and the patient must breathe pure air. Thirdly, the growth of the cancer may perhaps be checked by the bromide of potassium, or by the iodide of iron, or by the iodide of arsenic. By these measures, perseveringly used, mental and bodily ease may be given and life prolonged even for a few years.

Curative Treatment.—In attempts to effect a cure, one of three plans has usually been followed; viz., either excision; removal by caustics; or the promotion of absorption by methodical compression, sometimes combined with the application of intense cold.

First, as to Excision.—A general opinion can only be formed with great difficulty, since the views of surgeons

are so divided. But I think no one will deny that extirpation by the knife is quite insufficient to effect a cure; it may relieve the local distress, it may prolong life for a few weeks, and, as chloroform renders the operation painless, it may be sometimes worth while resorting to it to gain these objects. With regard to the time at which it is best to resort to the knife, Mr. Spencer Wells observes: "It is not to use it in the early stages of cancer, not to use it unless the cancer is actually ulcerated, or growing so fast that the skin is about to give way. In such cases, especially where an open cancer gives great pain, and is wearing away the patient by bleeding or profuse fetid discharge, the knife is used in the hope of relieving suffering, and prolonging, not saving life. In some other cases, where a cancer causes great mental anxiety to a patient, you may remove it at her earnest entreaty, after explaining fairly the danger of relapse." While speaking of the knife, it may also be mentioned that attempts have been made to destroy malignant tumors by lowering their nutrition; with which object practitioners have tied the chief nutrient arteries of the affected part. No real success has attended these efforts.

Secondly, Removal by Caustics.—This method has found many advocates in the present day; and it possesses at least this advantage, that it may be useful in deeply ulcerated and some other cancers, where the knife is objectionable. The chief agents which have been used are arsenical pastes, chloride of zinc, chloride of bromium, sulphate of zinc, manganese cum potassa, the strong mineral acids, and the concentrated alkalies. The *arsenical pastes* cannot be employed without great caution, inasmuch as their action is not merely local, but pervades the whole system. M. Manec, of the Salpétrière Hospital, Paris, has largely used them; he believes that arsenic has a peculiar destructive affinity for cancerous growths, and that its action does not extend to healthy tissues. His formula—the only one which should be tried—is one part of arsenious acid to seven or eight of cinnabar, with four of burnt sponge, made into a paste with a few drops of water. He does not apply it to a surface of greater extent than the size of a ten cent

piece at each application; and he states that the quantity of arsenic absorbed from such a surface never produces unpleasant symptoms. Should severe pain arise, it may be mitigated by applying bladders containing ice and salt.

The *chloride of zinc* is a valuable agent, especially as there is little to fear from its absorption. The epidermis must first be destroyed by a blister or by strong nitric acid; and the caustic is then to be applied, in quantity varying with the amount of destruction required. Dr. Fell's plan of treatment consists in the use of chloride of zinc combined with a perennial plant known by the name of puccoon, but described by botanists—owing to the blood-like juice which exudes from it when cut—as the Sanguinaria Canadensis, or blood-root. Together with this application, the general health of the patient is attended to; a nourishing and sustaining diet is allowed; and the puccoon is administered thrice daily, in half-grain doses. Frequently, also, Dr. Fell combines with this drug the sixteenth of a grain of the iodide of arsenic, and one grain of the extract of conium. The *chloride of bromium* has been highly praised by Landolfi, who uses it made into a paste with flour, or combined with other caustics. The proper method of applying the paste, is on a piece of linen cut to the size of the part to be destroyed. At the end of twenty-four hours the rag is removed; the slough separates after a few days; and the sore is then dressed with lint soaked in a solution of chloride of bromium—ten grains to twenty grains in water. The patient takes a pill morning and evening, containing one-tenth of a grain of the chloride. *Sulphate of zinc* has been strongly recommended by Professor Simpson, who says that when it is applied to an open and diseased surface, it acts as a safe, most powerful, and manageable caustic. It may be employed in the form of a simple fine powder, or as a paste made with glycerine—one ounce of the salt to one drachm of glycerine; or as an ointment—one ounce to two ounces of lard. When used in either way to an open or ulcerated surface, the part to which it is applied is rapidly destroyed to a depth corresponding to the thickness of the superimposed layer; the slough usually

separates on the fifth or sixth day; and there is left behind, if the whole morbid tissue be removed, a red, granulating, healthy wound, which rapidly cicatrizes. Until all the disease is destroyed, the applications must be repeated. The sulphate of zinc will only act as a caustic to a broken or open surface; hence, when the epithelium is entire, this must be removed by a small blister, or by a strong acid. Its application gives rise to local pain and burning in most instances, but never to any constitutional disturbance. The *manganese cum potassa* is recommended by Mr. Weedon Cooke in ulcerated cancer; it is efficacious, causes but little pain, removes all unpleasant odor from the sore, and does not injure the general health. It may be used as a powder, or made into a paste with water; it must be applied in a layer as thick as the tissue to be destroyed. By means of carrot poultices the eschar drops off in three or four days; when, if necessary, the manganese is reäpplied until the diseased mass is all destroyed, and the subjacent healthy tissues granulate and cicatrize. With regard to the *strong mineral acids* and the *concentrated alkalies*, but little need be said. If the former be used, sulphuric acid, made into a paste with saffron, will prove the most efficacious; if the latter, the Vienna paste.

The following recipe was sent to the author by Mr. Fugitt, of this State, who has acquired some notoriety as a cancer-curer. It is supposed to be substantially the same with that on which the Rev. Dr. January principally relies.

Recipe. — Take Pulverized Beech Drops, 29 grains; Red Puccoon Root, 3 grains; Pure Arsenic, 1¼ grains. Mix thoroughly together, and keep in a dark place.

Make Ointment.—Take a handful of slippery-elm, a handful of mullen, and a handful of the weed life-everlasting: put them in a pot, cover them with water, and boil until you get the strength thoroughly out: then remove the herbs, and strain the liquor: then cleanse the vessel, return the strained liquor, and boil slowly down to one pint: then add about one pound of white resin and one pound of mutton suet: continue to simmer until the water is out. While the mixture is cooling, you must stir and work it as a shoemaker does his wax.

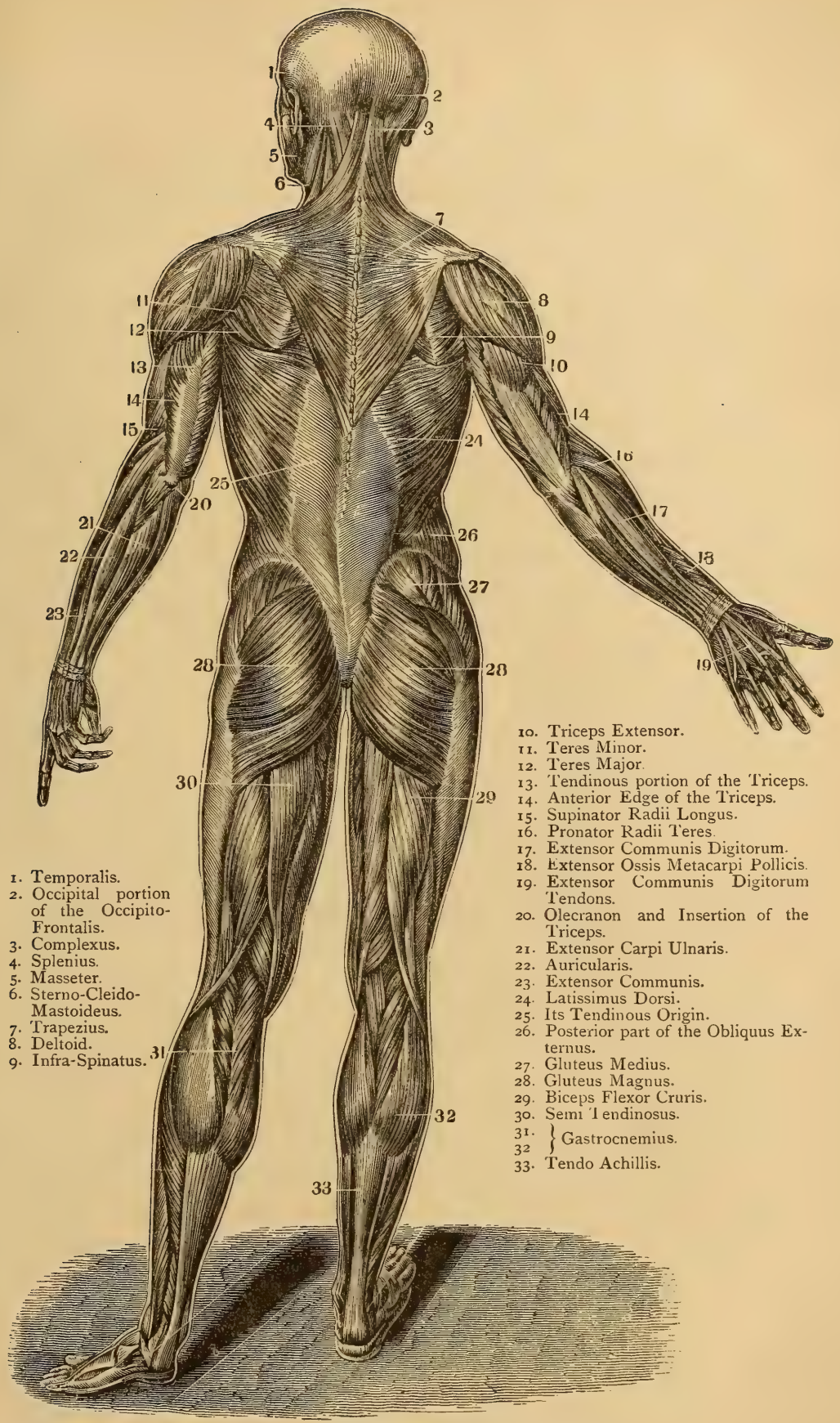
Application,—If the Cancer be not raw, scarify it; then take a piece of thin cloth, half an inch larger in diameter than the cancer, and spread the salve over it, and apply it to the cancer at night; the next morning remove it, and put on a good coat of the powders, with the salve only on the sound flesh, so as to hold the powders on the parts which are raw. Let the powders remain on thirty-six hours. Then take them off, and put on the salve plaster, which must remain twelve hours.

Then clean off the cancer, and apply the powders again, suffering them to remain for thirty-six hours, as before, thus alternating until a cure is performed. If the dead flesh should not become soft, and come away of itself, you may hasten the operation by cutting it away before applying the powders. Continue a plaster of the salve until the cancer cures up, keeping all water from the cancer from the commencement.

Thirdly. There remains for consideration the plan which chiefly has for its object *the promotion of absorption by methodical compression, with or without the application of intense cold.* Pressure is supposed to act beneficially in cancer by diminishing the supply of blood, and hence of nourishment, to the tumor; by depriving the cells of the space necessary for their growth; by injuring them from direct violence, and by promoting their absorption. Since compression was first proposed, by Mr. Samuel Young, in 1809, numerous cases have been treated by it, by different surgeons; and certainly the results seem to have been more favorable than those produced by any other mode. The pressure must be methodically and perseveringly applied.

The efficacy of intense cold depends on its arresting the circulation, producing some change in the microscopic cells, and in altering the vitality of the part: it not only gives relief from pain, but is said to arrest the progress of the disease. In cancer of the uterus, the frigorific mixture—equal parts of ice and salt—may be applied, by means of a gutta percha speculum, daily, for fifteen or thirty minutes, or even oftener.

But the result of my own experience and observations leads me to believe that all these means will very generally fail in performing a permanent cure when applied to open cancer; but, in the early stage, before ulceration has taken place, I have frequently extirpated tumors which I *believed* to be cancerous, which never returned. I always, however, put the patient upon the alterative treatment recommended in scrofula. I have also cured many cases of scrofulous and syphilitic ulcers, which cancer-doctors had pronounced true cancer, and had failed to cure. But in every instance in which the ulcer presented the true cancerous character I have failed to do more than retard its progress and lessen the patient's sufferings.



1. Temporalis.
2. Occipital portion of the Occipito-Frontalis.
3. Complexus.
4. Splenius.
5. Masseter.
6. Sterno-Cleido-Mastoideus.
7. Trapezius.
8. Deltoid.
9. Infra-Spinatus.

10. Triceps Extensor.
11. Teres Minor.
12. Teres Major.
13. Tendinous portion of the Triceps.
14. Anterior Edge of the Triceps.
15. Supinator Radii Longus.
16. Pronator Radii Teres.
17. Extensor Communis Digitorum.
18. Extensor Ossis Metacarpi Pollicis.
19. Extensor Communis Digitorum Tendons.
20. Olecranon and Insertion of the Triceps.
21. Extensor Carpi Ulnaris.
22. Auricularis.
23. Extensor Communis.
24. Latissimus Dorsi.
25. Its Tendinous Origin.
26. Posterior part of the Obliquus Externus.
27. Gluteus Medius.
28. Gluteus Magnus.
29. Biceps Flexor Cruris.
30. Semi Tendinosus.
31. } Gastrocnemius.
32. }
33. Tendo Achillis.

POSTERIOR VIEW OF THE MUSCLES OF THE BODY.

SYPHILIS.

The reasons for introducing this iniquitous and loathsome disease at all into this work are, that, in many of its constitutional forms, it so nearly resembles scrofula as to render an accurate description absolutely necessary, in order to distinguish them; and, as they require to be somewhat differently treated, it often becomes of the greatest importance that the two diseases should not be confounded or mistaken for each other. Then, the true scrofulous diathesis in children is often the result of a syphilitic taint in the parent; and though not to be distinguished from other cases in its external manifestations, yet requires a modified or peculiar treatment, making its history become very important. Then again, when we consider that syphilis is often communicated to innocent individuals, even in its primary form, it is very essential that this form should also be described, in order that it may be recognized and properly treated before serious, and perhaps irreparable, injury is sustained by the innocent sufferer. And then again, the disease is often contracted by servants, and should be understood by those who have their management, that proper means may be timely resorted to for its suppression. Otherwise, if only the guilty individuals were to suffer, this disease would have been passed over in silence, and the subjects referred to the physician for counsel and treatment.

Syphilis, or *pox*, is a specific disease, communicated by a specific poison, received by contact with an infected person.

The syphilitic virus may take effect upon any part of the surface which happens to have a break in the cuticle or external covering of the skin, or a mucous membrane. The first symptom is a mere itching of the part; but soon a little watery blister is formed, or a slight watery exudation takes place from the surface, if it has been divested of the scarf-skin by scratching or otherwise. This blister or exudation sometimes dries, and nothing more than a hardened surface is left; in this case the virus seems to be almost entirely absorbed, and secondary symptoms are certain to follow. In this way persons are occasionally found to have

the disease fully developed in its secondary or *tertiary* forms, without having suspected any danger, the primary symptoms having been so slight as to have escaped notice.

But generally, after a few days, suppuration takes place in the seat of the inoculation, and ulceration removes the skin and under layer of areolar tissue, forming a cup-like cavity with raised indurated edges, but very frequently the ulcer remains entirely superficial. In either case the secretion is rather scant and thin. Not much soreness is usually felt, and but for the after-consequences, the disease would appear to be of a trifling nature, but ulceration goes on enlarging the area of the ulcer, and, if not arrested, may finally destroy much of the soft parts. In the meantime, the virus extends along the absorbents to the nearest gland, which takes on inflammation, which, if not attended to in the early stage, ends in suppuration and a destruction of the gland. When the primary sore matters freely, there is less danger of the poison being absorbed, and when the virus is arrested by a gland and brings about active inflammation, it is not so likely to progress any farther, and the true constitutional disease may never be developed. The longer the duration of the primary venereal sore, the greater the probability of secondary symptoms; moreover, the worse the state of the general health at the time of contracting the primary ulcer, the greater the risk of the constitution subsequently suffering. Many authorities believe that constitutional syphilis may be communicated from an infected to a healthy person without the intervention of primary disease, especially where there is frequent contact between two parties. Secondary skin diseases may be so communicated from the husband to the wife; or it is probable that the husband, having constitutional syphilis, may taint the ovum, and that through the latter the mother may be infected. Tertiary symptoms may appear at a very long period after the primary disease, and generally after the secondary symptoms have disappeared. According to Mr. Parker, the diseases which have been termed tertiary are deep-seated affections of the skin, as tubercles; and affections of the glands and bones,

as periostitis, exostosis, caries, and necrosis. To these may be added various internal affections, as yet neither well known nor described. The tertiary symptoms are not hereditary under any specific form of venereal affection. The children of persons thus affected are very commonly scrofulous, phthisical, or predisposed to cancerous diseases. Many of the constitutional forms of disease are capable of propagation by contact or inoculation; and in persons cohabiting as man and wife, a syphilitic symptom existing in one is very commonly produced in the other in precisely the same form. As soon as constitutional syphilis manifests itself, attempts should be made to cure it. Pregnancy even is no bar to the treatment, for the disease is much more likely than the remedies to produce abortion.

Symptoms.—Constitutional syphilis very frequently manifests itself by the production of certain cutaneous diseases; by ulcers on the skin; by warts and mucous tubercles; by alopecia or baldness, loss of the eyebrows and eyelashes; by inflammation and ulceration about the root of the nails; by superficial ulcerations on the tongue, lips, or pillars of the fauces; by ulcerations of the larynx; by enlargement of the testicles—syphilitic sarcocele; by diseases of the periosteum and bones; and, in a few instances, by a peculiar form of bronchitis.

The syphilitic cutaneous eruptions are of various kinds. They are generally chronic; of a bronze or copper color; frequently squamous or scaly, and prone to excoriate; sometimes assuming the form of tubercles of a livid or brown color, surrounded by a coppery areola, and having a tendency to degenerate into foul, offensive ulcers; while occasionally these affections merely take on the appearance of brown or dirty yellow stains. Loss of hair from syphilitic causes seldom occurs without other symptoms; it is especially combined with the formation of scurf on the scalp, and with inflammation of the roots of the nails, so that these latter structures crack and break easily, or even fall off. The syphilitic ulcers of the fauces, tonsils, and pharynx are often excavated, covered by an ash-colored slough, and surrounded by a livid, unhealthy appearance of

the mucous membrane. Occasionally they slough, and extend rapidly; they give rise to pain and difficult deglutition, and they are always attended with more or less constitutional disturbance. Ulcerations of the nostrils are also not uncommonly the only symptoms of the general infection of the system; they give rise to offensive discharges, and often result in a destruction of the soft bones of the nose. Enlargements upon the superficial bones, called *nodes*, are not uncommon, which appear to be caused by a morbid deposit between the periosteum and bone; they are oftenest found upon the leg, arm, or about the head.

A volume might be written upon the history and treatment of this disease, but the above must suffice as to its appearances, and I will not take up space by detailing the different modes of treatment which have been devised and recommended by standard authors; though not intimating by this that they embrace nothing reliable, but in order to be brief, and not confuse the minds of my readers by diverse recommendations, we will close the observations upon this subject by giving our own simple plan of procedure, which is to let the primary disease alone, merely keeping it cleansed by a frequent use of castile soapsuds: the soapsuds promote a free discharge from the ulcer more certainly than any other application, and thus tend to prevent an absorption of the virus. Most practitioners cauterize the surface of the *chancre*, or primary sore; but I was taught by Professor Dudley to let the chancre alone, so that it might serve as an index by which the progress of the cure can be known. It is true that if the original seat of the inoculation were cauterized before any absorption had taken place, this measure would, by destroying the virus, prevent any secondary symptoms; but as few cases are seen or brought into notice until absorption has already taken place, there can then be no advantage obtained from cauterizing, and we will have no means of determining when the disease is radically cured. But if the primary sore is not disturbed, it will inform us exactly when the general remedies have conquered the disease, for it will improve in appearance as the cure progresses; or even if no apparent

alteration takes place, yet when the general disease yields, the sore will heal very suddenly; sometimes so suddenly that the patient cannot tell when it took place. For *bubos*, or inflammation and swelling of the glands, spoken of, I find nothing better than equal parts of chloroform liniment and tincture of iodine applied freely to the rising night and morning, and covered with a slippery-elm poultice, or folds of soft linen kept saturated with whiskey. If it be discovered that the gland will suppurate, it then is best to hasten the process by applying the lye poultice, etc. The general treatment which I have found to succeed is the same recommended in scrofula, with the addition of mercury in some form. I usually commence by giving blue-mass every night in pretty full doses—say from ten to twenty grains—and a tablespoonful of epsom salts in the morning. After this has been repeated three or four days, I then commence with the following prescription: comp. syr. val., or fever syrup, and comp. syr. of sarsaparilla, each eight ounces; iodide of potassæ, one ounce; bi-chloride of mercury, or corrosive sublimate, thirty grains: of this I order a large teaspoonful after each meal; or the mercury may be omitted from this prescription, and a blue-mass pill taken every night. No other treatment has been found necessary in my practice for many years, and I never change a sure plan for one less certain, or for an untried one.

If there should be any doubt as to whether the disease be scrofulous or syphilitic, it may be decided by the effect of the treatment; for if scrofula be mistaken for syphilis, and the mercury added to the prescription, the disease will almost invariably get worse; or, if syphilis be mistaken for scrofula, the remedies will often fail of producing the amendment which usually follows their exhibition. But sometimes the two diseases are combined, and then it becomes difficult of management. I once had a case of this kind which annoyed me exceedingly; the patient was a negro, who had previously presented decided scrofulous tendencies, who applied to me for the treatment of an injury received in the groin by falling through an iron grating on the sidewalk; there was no doubt of the correctness of his state-

ment, as the signs of a recent contusion were easily seen, and phlegmonous inflammation of an active kind had supervened. But, after these active symptoms had been allayed by poultices, etc., and I expected to see the parts heal, I was perplexed to find a suspicious condition of the ulcer, and accused the boy of having played false; but, as he stoutly denied any thing of the kind, and as I saw other symptoms of scrofula, I decided that the scrofulous taint had affected the sore, and put him upon the proper treatment. Some amendment took place; but the disease lingered until copper-colored blotches on the surface revealed the secret, that, besides getting hurt by the fall, and having strumous predisposition, he had also been inoculated with the syphilitic virus. An addition of a blue-pill every night to the other treatment finally succeeded in clearing the skin of the blotches; it was then discontinued, and the alterative alone given, which finally restored him to perfect health.

CHANCROID.

Since this work was first published very careful and extensive investigation of the subject of syphilitic diseases has proven, to the entire satisfaction of the profession, that there is a disease which resembles *true syphilis*, and has been confounded with it, embracing, in fact, by far the greater number of cases known as syphilitic, which never becomes constitutional, and is never benefited by the use of mercury. This disease is known as *chancroid, or soft chancre.*

It may be distinguished from *true syphilis* by the primary sore having an abrupt and ragged margin, and the bottom of the ulcer being covered by a pretty thick layer of very tenacious grayish secretion; by there usually being several ulcers at the same time, whereas in *true syphilis* the chancre is nearly always solitary, and by the discharge being much more profuse.

As the confounding of this disease with *true syphilis* has given rise to much confusion in description, and led to very grave mistakes in practice, it becomes important that each

should be described, so as to enable the reader to make a correct diagnosis. Great mischief has often been done by pushing the mercurial treatment in cases of *chancroid*, as this medicine is never of advantage, and generally highly injurious in its treatment. The distinctions recognized between *chancroid* and *syphilitic* ulcers are, the first has abrupt, ragged edges, the second is cup-shaped, or may remain even with the surrounding surface; the first has a thick, glairy, tenacious, and copious deposit in the bottom, in the second the discharge is thin, scanty, and possesses no tenacity; in the former the ulcers are soft underneath, while in the latter they always have a hard, indurated base: the *chancroid* usually appears in several places at the same time, and is readily extended to new points by inoculations produced by transferring the matter by scratching; in *true syphilis* there is rarely more than one ulcer, and it can not be transferred to new points on the same person by inoculation. Then, *chancroid* never extends beyond the first gland, and consequently never becomes constitutional, and is therefore not amenable to constitutional remedies further than as they may act upon general principles in subduing an inflammatory state of the system, or correcting any morbid condition which may interfere with the proper effect of local remedies.

The discovery of the distinction between *syphilis* and *chancroid* has marked a new era in the management of venereal diseases. The confounding of the two forms of venereal ulcer has been, as we have said, the cause of much confusion in description, and of very grave mistakes in practice; for, as *chancroid* will run its course and get well spontaneously or under very simple treatment, and as this form is much oftener met with than *true syphilis*, it led many practitioners to believe that mercury was unnecessary in the treatment, emboldened charlatans to advertise that they could cure all forms of venereal diseases without mercury, and their apparent success would confirm them in the delusion, and secure a run of custom. But whenever such practitioners get hold of a case of genuine *syphilis* it runs on, in defiance of their boasted specifics, through

all its terrible stages, causing death in the most loathsome and terrific form known in this sin-cursed world.

Then, again, when the physician had adopted the idea, which but very recently was sustained by the very highest authority, that mercury was essential in every case of *syphilitic* ulcer, and ought to be pushed until the disease yielded, the motto being "try and try again," the consequences were often little less disastrous than in the former case, the constitution being destroyed and even the bones rotted by the abuse of this potent medicine. The reader will therefore perceive how vitally important it is that a correct diagnosis should be made.

The profession has, as yet, discovered no specific for *chancroid;* it yields very kindly, in most cases, under the influence of cleanliness and simple dressings. In uncomplicated cases I have found nothing necessary to be done more than to cleanse the ulcer once or twice a day with castile soap suds, and then dust it with a powder composed of equal parts of *calomel* and *pulverized nutmeg*. There is no danger of the calomel being absorbed, as the soap will cause the ulcer to *matter* sufficiently to prevent that taking place. If the habit is full, I order as much of the saline mixture, taken daily in broken doses, as will keep the blood cool and the bowels open. The diet in such cases should be light, but in cases which are below the healthy standard I order nutritious diet and tonics. If there exists any other disease, or a depravity of the constitution, each case must be treated as such complications will indicate.

GONORRHEA, OR CLAP.

When this work was first published there was nothing said upon this disreputable disease, but, for reasons then given for introducing a chapter on syphilis, it is thought best to give a short, plain description of *gonorrhea*, and the best and most simple mode of treating it.

It has been generally supposed that this disease was the effect of a specific virus, and that it could only be produced by contact with one who had the disease. But I had long since been convinced that this was not so, and lately sev-

eral eminent writers who have had large opportunities to observe the disease have decided that it can be and often is generated by indiscriminate impure cohabitation, and even can be produced by the acrid secretions from the mucous lining of the vagina in certain forms of inflammation of that membrane, making it possible for a man to contract the disease from his innocent and virtuous wife. It is important that this should be known, as it has often happened, several cases having come under my own observation in which very serious domestic disturbance has originated from this cause. For instance, a man finds himself laboring under this disease, and, knowing that he has had no opportunity of contracting it but from his wife, he will naturally infer that she has been playing false; and what will strengthen this belief is that the discharge in leucorrhea, or whites, when there is chronic inflammation of the mucous lining of the vagina, does simulate very closely the true gonorrheal discharge. But, though it is well to bear in mind that gonorrhea may be contracted from a perfectly innocent person, yet those cases are rare, and it is always safe to presume illicit intercourse when this disease presents itself. However originated, when this disease once has an existence it becomes contagious, and is in no respect different from that which has come down through a long disreputable line of succession.

Gonorrhea usually makes its appearance just inside the external orifice of the urethra, which presents a deeper redness than ordinarily; at first it only itches, but presently a burning sensation is felt on passing water, the inflamed mucous membrane being now not in relation to the urine. In the male there can now be a drop or two of yellowish fluid forced from the urethra by pressing upon the glans penis. If neglected and allowed to proceed it travels onward toward the bladder, but very rarely extends into that organ, but usually stops a little more than half-way. The burning on passing water becomes more and more intense, and the discharge increases in quantity, the organ becomes swollen, and the under side, being the most vascular, swells the most, and gives it a curved appearance. But some-

times the inoculation takes place on the outside of the glans penis, under the loose fold of skin called the prepuse, and may be easily mistaken for syphilis. It may be distinguished from this disease by there being no chancres—eating sores—but the whole surface under the prepuse looks raw, and throws off a profuse amount of very filthy-looking discharge. The virus, like that of syphilis, may be absorbed and occasion buboes which can not be distinguished from those produced by pox; they are, however, not so liable to suppurate, and are much easier removed by resolution. If a person suffering from this disease is not very careful he may allow some of the poison to adhere to his fingers, and then, by rubbing his eyes, communicate the disease to them. Most terrible results are apt to follow.

In the female this is usually quite a trifling disease, and, I am disposed to think, is often entirely unobserved, the filthy subjects of it nearly always having the whites, and this may easily be mistaken for that complaint; it however causes more burning in passing water, and will always show inflammation at the orifice of the urethra, which the other does not. This much must suffice as to the nature and diagnosis of this disease, and we will now give some plain directions for its treatment.

Treatment.—Taken at its inception, while it is confined to about an inch of the urethra, it can be arrested at once. Procure half an ounce of a ten-grain solution of nitrate of silver, and a small glass penis syringe; grasp the organ about midway, and press it between the thumb and finger, while an assistant throws up some of the medicine; let the syringe remain in for a few moments, so as to prevent the solution from passing out. This will cause pretty severe suffering for a few minutes, but the cure will be perfect, and the remedy need be applied but once. Care must be taken to press the urethra firm enough to prevent the solution from passing into the bladder, as of this strength it would do some mischief. But if the disease has continued for several days the probability is that the lining of the urethra has become affected too far up for this plan to

succeed, and it must be treated differently. I know of no specific for *clap;* many suppose balsam copaiva to be one, but it is certainly a mistake, and I have long since quit giving it, as the disease can be just as well managed by less objectionable means. I treat it as simple inflammation. Abstain from meat and stimulating drinks, take salts and soda in full purgative doses for a few days, and then only enough to keep the blood cool; a small tea-spoonful, dissolved in half a glass of water, taken three times a day, is usually sufficient. After this treatment has been continued a week, a tea made of the uva ursi leaves and the bark of wild cherry may be substituted. During the treatment the parts should be frequently bathed in cold or tepid water, and every night the organ should be wrapped up in a wet towel.

If there be swelling of the glands in the groin, use any good remedies for scattering them; the best I have seen tried is equal parts of tincture of iodine and chloroform liniment, and at night apply a poultice made of peach-tree leaves and wheat bran.

If the patient should present the appearance of being *bilious*, that is, if the liver does not do its whole duty, and suffers part of the material of which bile is made to remain in the blood, indicated by some yellowness of the whites of the eye, duskiness of the skin, and a foul tongue, it will be well to give a few doses of calomel, or blue pill; and if there should be a dry skin, and more thirst than is natural, put two grains of tartar emetic into a glass of water, and take a swallow occasionally, so as to produce very slight nausea, and continue it until the surface becomes moist.

If the disease should become transferred to the eyes, it must be treated actively, or the sight may be lost. Leeches should be at once applied, the eyes bathed, almost continuously, with a decoction of oak bark; and a solution of nitrate of silver, ten grains to the ounce, dropped into the eyes two or three times every day. When the disease has become partially subdued, apply blisters behind the ears, and keep them running by dressing them with savin ointment.

There will be found in the chapter of formulæs several recipes upon which some of my distinguished medical

friends chiefly rely in the treatment of this disease. One of the most prominent and successful practitioners of my acquaintance, and who does an extensive practice in this disease, informed me recently that he had, for many years, relied almost exclusively on mild, astringent injections for the cure of simple gonorrhea. His favorite injection is composed of acetate of lead and sulphate of zinc, each two grains, and water one ounce, this to be thrown into the urethra three times a day or oftener, and keep the parts enveloped in a cold, wet towel.

Although I have seen many instances of stricture and other injuries caused by improper injection, yet I am certain that this can do no harm, and if used in conjunction with the regimen I have recommended, might hasten and insure the cure.

A very formidable consequence of gonorrhea is an occasional transfer of the irritation to one of the testicles, (I have never seen both involved at once,) causing what is called *Hernia Humoralis*, that is, the nut becomes swollen, hard, and exceedingly painful. It is true, this disease sometimes arises from other causes, as fatigue, straining, exposure to wet and cold, etc.; but the CLAP is the most common cause of it. But however it may originate, it is a most painful and dangerous complaint, so far as the manhood of the patient is concerned, and should be treated actively at once. All the means calculated to subdue ordinary inflammation should be resorted to, as leeching, fomentations, poultices, cooling purgatives, combined with anodynes, etc. Example: *leech*—nothing can be substituted for this—then envelop it in a warm, wet cloth, keep the bites bleeding as long as possible, then apply a hop poultice, or a cloth saturated with an infusion of bitter herbs, as tansy, catnip, hoarhound, etc.; at the same time add a table-spoonful of epsom salts, a tea-spoonful of common soda, and a drachm of Dover's powder, or a tea-spoonful of laudanum to a common tumbler of water, and give a table-spoonful of this every half hour, until relief is obtained, then make the intervals longer. Another unpleasant consequence of *clap*, which often happens, is stricture of the urethra. I treat this by the use of

slippery elm *bougies*. See slippery elm in the chapter on formulæs.

If the irritation has extended to the bladder, take creosote, twelve drops, cinnamon water, two ounces; dose—a tea-spoonful every three hours. Also, bicarb. potasa, one drachm, water, eight ounces; dose—a table-spoonful every three hours. These remedies will promptly relieve what is called gravel in pregnant women.

GLEET—RUNNING AT THE REINS.

This disease is characterized by a discharge, more or less copious, of a milky or glairy fluid from the urethra, attended by a sense of weakness and giving away about the loins, is discharged involuntarily and nearly without pain or uneasiness. It is often the sequence of badly cured gonorrhea, but is also frequently occasioned by exposure to cold and wet, or by excessive sexual intercourse. The treatment which has rarely failed in my hands of giving complete relief is to fill a bottle about half full of equal parts of chippings of the knots found in pine plank and wild cherry bark, and then fill it with good whisky, and take one or two table-spoonfuls three times a day. A burgundy pitch plaster applied to the loins will assist the cure, as also will mild astringent injections into the urethra; an infusion of common green tea I prefer to any thing which I have found as an injection.

It can also be cured by drinking daily, for a few weeks, a pint of the infusion of uva ursi (barberry) leaves, made by pouring a pint of boiling water on two table-spoonfuls of the leaves; four or five drops of spirits of turpentine dropped on a lump of sugar should, at the same time, be taken three times a day.

The seminal secretion is often combined with the usual discharge in gleet, and involuntary and nocturnal emissions are frequently mistaken for it; in either case no special treatment is necessary. If the patient is suffering from general debility and relaxation resort should be had to tonics, generous diet, and all the other means calculated to improve the tone of the system; or if there be repletion

and over action, resort should be had to abstinence from stimulating food and drinks, and broken doses of the saline mixture.

The country has been secretly flooded by the villainous circulars of charlatans addressed to young men on seminal weakness, etc., by which thousands of good young men have been rendered unhappy, and have had their health ruined by taking the nostrums prepared by these scoundrels to remove a condition which was neither a disease nor the effect of sinful practices, but merely the natural consequence of continence. I am satisfied that instances of self-abuse are much rarer than would be inferred from the writings of some of our best authors, and genuine cases of seminal weakness are still rarer; when it does exist the following pills may be taken:

℞ Gum camphor, 20 grains.
Sul. of morphia, 5 grains.
Muriate of ammonia, 30 grains.
Mix; make 20 pills; take one every night.

RHEUMATISM.

Rheumatism may be divided according to its seat or its grade of excitement. Thus, some writers treat of it under the heads of articular and muscular rheumatism, the former occupying the joints, the latter the muscles; but the fact is, that, though the disease is often situated exclusively in one or the other of these parts, it quite as frequently occupies both, to a greater or less extent, in the same attack. A better division is that founded upon difference in grade; and, for convenience of description, the four following varieties may be recognized: 1. *The acute*, in which violent local inflammation is attended with considerable constitutional disturbance, or fever. 2. *The subacute*, in which the inflammation is less violent, and there is little or no fever. 3. *The chronic*, which is characterized by long duration, and the lowest grade of inflammatory action; and, 4. *The nervous*, in which there is neither inflammation nor fever, the disease consisting exclusively in irritation, and that directed especially to the nervous tissue.

ACUTE RHEUMATISM.

Symptoms, Course, etc.—Fever invariably attends this form of the disease. It is said sometimes to precede the inflammation; but this event is rare. The primary symptoms are generally local. In the great majority of cases, they show themselves in the extremities, and usually first in the lower. The disease may be confined to a single joint, or to a part or the whole of one limb; but much more frequently it affects several limbs, and different portions of the trunk, jointly or successively; and occasionally it involves almost the whole exterior of the body. It has been observed, however, that when this last event occurs, one side of the body is more severely affected than the other. The small joints, as those of the fingers and toes, are less frequently inflamed than the larger, as the ankle, knee, wrist, and elbow.

Sometimes the complaint begins with a feeling of uneasiness or stiffness in the part, which soon amounts to soreness or positive pain, especially upon motion. In other instances, the first symptom is acute and violent pain. Heat and swelling soon come on; and, when the pain has been sharp and lancinating, it is very commonly moderated after tumefaction. Extreme soreness, however, remains, and the slightest movement of the part occasions suffering. The swelling is usually tense and elastic, and the surface often reddened, with a light rose-color gradually shading off into that of the healthy skin; but in many instances the natural color is in no degree altered.

Commencing generally in one part, the inflammation quickly extends to others, as from the ankle to the knee, or from the ankle or knee of one side to the corresponding joint on the other; then to the wrist or elbow; sometimes in its progress attacking neighboring parts, sometimes distant parts in succession, and often declining or disappearing in one seat after fixing upon another. The swelling of the deserted joint does not immediately subside with the pain, but usually becomes softer, and, instead of being firm and elastic, will often pit somewhat upon pressure. Not unfre-

quently, a joint is attacked a second time, and occasionally a third or fourth time, or even more frequently, before the disease ends. In some cases, the inflammation is confined chiefly to the neighborhood of the joints; in others, it affects more especially the muscles; in others, again, both structures are involved, and, indeed, all the tissues, the whole limb being swollen, tense, and extremely tender. In the joints, the disease may be confined to the ligaments, or may affect also the synovial membrane. In the former case, the swelling is firm and elastic, in the latter often somewhat soft and fluctuating, in consequence of the increase of the synovial secretion. The latter condition is especially observable in the knee, where fluctuation may be perceived on each side of the patella. The swelling is usually greater in the more superficial joints, as the ankle, knee, and elbow, than in those more protected by muscles, as the hips and shoulders. In severe cases, the suffering is often very great. The pains, which are scarcely ever entirely absent, are at times almost excruciating, being described as tearing, rending, etc., and the slightest movement, or the least jar or pressure, produces so much suffering that the patient does not dare to change his position, and dreads the approach of any one to his bed.

Very soon after the local seizure, rigors and other symptoms of commencing fever are experienced, followed by increased frequency of pulse, heat of skin, furred tongue, loss of appetite, thirst, and occasionally headache. The fever is almost always of the inflammatory character, and generally of a violence proportionate to that of the local affection, though not invariably so. The pulse is full, strong, and usually not very frequent, varying from ninety to a hundred and ten, and probably in the greater number of cases not exceeding a hundred. Respiration is not sensibly disturbed while the disease confines itself to external parts. The surface, though warm, is less heated than in most other fevers, and is often moist—sometimes, indeed, bathed in copious sweats, which have a peculiar sour and sickening smell, and have no effect in relieving the inflammation or pain. The tongue is usually moist and thickly covered with

a whitish fur. There is seldom nausea or vomiting. The bowels are generally constipated, and sometimes obstinately so. The secretions are little diminished, with the exception of the urine, which is scanty, high-colored, and disposed to let fall lateritious sediments upon cooling. The brain is usually remarkably exempt from disorder, the patient being scarcely ever delirious, though not unfrequently deprived of sleep by the violence of his pains. The fever is usually remittent, with exacerbations in the evening, which are often accompanied with an increase of the pains. These are consequently worse at night, and relax somewhat with the fever in the morning.

The disease may run its course, and very often does so, without penetrating any of the great cavities. But often, also, either by a simple extension, or by a metastasis of the inflammatory action, various internal organs become affected, and the case very seriously complicated. The most frequent of these complications is inflammation of the lining and investing membranes of the heart, constituting endocarditis and pericarditis. The fact that serious organic disease of the heart occasionally originates in rheumatism, and even the peculiar liability of the cardiac membranes to become inflamed, have been long known to the profession; but Bouillaud was the first to prove the frequency of the affection, and its existence in many cases in which the ordinary symptoms would not have indicated it.

Next to the membranes of the heart, the pleura is probably the most frequent seat of internal rheumatic inflammation. Pleuritis, however, seems, in most cases, to be an extension of the cardiac disease, or at least to occur simultaneously with it. The pleurisy of acute rheumatism differs apparently in nothing from the disease arising from other causes. (See *Pleurisy*.)

Sometimes the brain or its investing membranes are affected. There is reason to believe that the disease is seated more especially in the membranes, though an irritation is undoubtedly propagated to the cerebral substance.

The peritoneum is said to be sometimes, though rarely, affected. I do not remember to have witnessed an instance

of the kind. Occasionally violent affections of the stomach and bowels supervene in rheumatism, but oftener, I believe, in other forms of it than in the acute. The same may be said in relation to the kidneys.

A variety of acute rheumatism denominated *bilious*, is quite common in miasmatic districts. Its peculiarities may be dependent upon two causes. The transfer or extension of rheumatic irritation to the liver may derange the functions of that organ, giving rise in some instances to bilious vomiting from an excess of secretion; in others, to yellowness of the tongue, conjunctiva, and skin, with bilious urine and clay-colored stools, from a suspension of the secretion, as in jaundice. But more frequently, the rheumatism is coincident with an attack of intermittent or remittent fever, and exhibits, along with its own peculiar phenomena, the bilious symptoms and paroxysmal character of those affections.

The disease occasionally assumes an *adynamic* character, marked by diminished force and increased frequency of pulse, copious sweats during sleep, a feeling of great debility, and a more than ordinary tendency to metastasis. The symptoms, however, are seldom or never of that peculiar kind denominated typhous.

The duration of acute rheumatism is uncertain. By proper remedial measures it may frequently be arrested in a week or two; but sometimes it runs on for six weeks, two months, three months, or even longer. Perhaps from two to three weeks is the ordinary duration under judicious treatment. In its course it not unfrequently exhibits alternations of amendment and aggravation; and sometimes, when every thing promises fairly, the disease resumes, without obvious cause, all its original violence. In some cases, it appears like a succession of local attacks in different parts, each running a course of a week or ten days, and not unfrequently recurring again and again in the same part. In any one position, a decline of the disease is indicated, first by the diminution or disappearance of the pain, then by a softening of the part, so that, instead of being tense and elastic as at first, it will not unfrequently retain for

some time the impression of the finger, and, lastly, by a gradual subsidence of the swelling. When the general disease is about to give way, new accessions of inflammation cease, or, if they occur, exhibit a much milder character; the violence of the pain everywhere subsides; the patient loses his excessive sensibility to impressions from without; and the febrile symptoms are moderated or disappear. Some swelling and soreness are apt to remain for a considerable time after the violence of the disease is passed; and weakness and stiffness of the joints and muscles are frequently left, after convalescence has been long established. In some cases, the febrile movement does not cease with the obvious inflammation, being kept up probably by some lurking affection of the internal organs, possibly by inflammation of the inner coat of the arteries. On the contrary, more or less local disease is not unfrequently left after the fever has gone, and the acute degenerates into chronic rheumatism.

Causes.—Almost the only known exciting cause of acute rheumatism is cold. Moisture increases its effect, but, in all probability, only by serving as a more rapid conductor than the dry air. The cold operates most powerfully during perspiration, from previous exercise or exposure to heat. Sleeping in damp sheets or upon damp ground, the wearing of wet clothes, exposure to cold rains without subsequent change of dress, and sitting in a damp, cold room, are examples of the kind of exposure which is apt to be followed by the disease. From a knowledge of the cause of rheumatism, it would be inferred that the complaint must be most prevalent in damp changeable climates, and, as relates to the seasons, in the latter part of autumn and in spring.

But something more is requisite than cold. There must also be a peculiar state of system predisposing to this form of disease. There must be a rheumatic diathesis. In what this diathesis consists has not been discovered. There are no signs by which its existence can be detected, with an approach to certainty. Large-jointed, muscular, and lank frames are probably more frequently affected than

those of opposite characteristics. Men are more subject to the disease than women, but, in all probability, because more exposed to vicissitudes of temperature. The predisposition is certainly much affected by age. Children under ten years, and adults over sixty, are seldom attacked; and the period of life at which the disease is most prevalent is probably between fifteen and thirty-five or forty. Among the most powerful predisposing causes of the disease is a previous attack of it. At least, persons once affected are more liable to the disease afterwards than they had previously been; and when it occurs in the old, it is almost always in those who have been attacked at an earlier period of life. I think it is no less certain that a predisposition to the disease is often inherited. It is very apt to exist in members of the same family, whether inherited or not. Debility appears to favor the predisposition; though full and vigorous health does not afford protection. The diathesis, when strong, is alone sufficient to generate the disease, without the aid of exciting causes.

Diagnosis.—Gout is the only disease with which the acute rheumatism is liable to be confounded; and from this it is in general readily distinguished. The same, however, cannot be said of some other forms of rheumatism. The diagnostic symptoms will be more conveniently given under the head of gout.

Prognosis.—Acute rheumatism, though an exceedingly painful disease, is in adults very seldom immediately fatal, and, if properly managed, rarely leaves any fatal effects behind it. If uncomplicated with the internal inflammations alluded to in the account of the symptoms, it may almost always be conducted to a favorable issue. Of these complications, the cerebral, though comparatively unfrequent, is probably, in proportion to the number of cases in which it occurs, most fatal. The dangers to be apprehended from endocarditis and pericarditis have been already alluded to.

SUBACUTE RHEUMATISM.

Very many cases of rheumatism occur, so limited in ex-

tent, and attended with so little constitutional disturbance, as to have no claim to be ranked with the acute variety; while their brief duration excludes them from the chronic. These are embraced in the division at present under consideration. As in the preceding variety, the disease may in this, affect either the muscles or the joints; but, while in the acute the joints are most frequently affected, in the subacute the precedence belongs to the muscles.

Symptoms, Course, etc.—Two or more joints may be inflamed; but, in probably the greater number of instances, the disease is confined to one at the same time; as, with the grade of action often present in these cases, an extension to several of the articulations simultaneously would give rise to decided fever, and thus constitute acute rheumatism. The local symptoms are not materially different from those described under the preceding variety. The pain, however, is usually less severe, amounting often only to slight aching or soreness. There is also less redness and heat, and the swelling is less tense and elastic. There is sometimes increased secretion of the synovial fluid, and that of the bursæ, and fluctuation may be noticed in the vicinity of the joint, especially the knee.

In the muscular form, as in the articular, the disease may extend to several muscles, or be limited to one. It very frequently extends to several in the same neighborhood, and concerned in the same office. In some instances, there is at first a feeling of soreness, which gradually increases until it amounts to a dull aching pain, which becomes acute when the muscle contracts. In others, the patient first becomes sensible of the complaint by a very severe sharp lancinating pain, which seizes the muscle upon some occasion when it is suddenly called into action, as upon attempting to rise from the sitting posture, to turn in bed, or to lift a burden. The pain is sometimes excruciating, so as to render the patient unwilling or unable to repeat the motion; and, when the part is necessarily moved, as in respiration, coughing, etc., the suffering is very great. During the intervals of motion, there is generally also a sense of uneasiness or aching, with increased heat, and the part is

usually more or less tender when pressed. Sometimes there is tumefaction; but it is seldom if ever considerable, and is often wanting. The pulse is sometimes excited, and the general heat increased; but the constitutional disturbance scarcely amounts to fever. Any of the external muscles may be affected, and the disease often takes a name according to its seat. The internal muscles are also often attacked either primarily or secondarily.

But this variety of rheumatism is not confined to the joints and muscles. It is probably capable of attacking any of the tissues. There is reason to believe that it sometimes seizes upon the nervous sheaths, producing pain upon pressure along their course, and extending an irritation to the nerves themselves, which is felt in pain and spasm of the parts to which they are distributed. Many of the severe and complicated nervous disorders, both of external and internal parts, connected with tenderness of the spinal column when the spinous processes are pressed, are probably owing to subacute rheumatism in the sheath of the spinal marrow.

This variety of rheumatism is peculiarly liable to metastasis, certainly more so than either the acute or the chronic. In the acute, the inflammation is so severe as to give a strong direction of the disordered constitutional tendencies to its own seat; in the chronic, the disease appears often to be almost local, and to have no disposition to change. In the subacute, the constitutional tendency to rheumatic disease is strong, while the local affection is so feeble, that it readily yields to causes which give the irritation another direction. The variety is intermediate between the high inflammatory and the pure nervous forms.

To complete a view of subacute rheumatism, it will be necessary to consider it in some of its more frequent and prominent seats.

In the Scalp.—The subcutaneous muscular and fibrous tissue of the scalp is occasionally attacked with this form of rheumatism. It is known by headache, often quite severe, soreness of the scalp on pressure, and the presence of rheumatism previously, or at the same time, in some

other part of the body. These symptoms will in general suffice to distinguish it from nervous or sick headache, for which, without care, it may be readily mistaken. In this latter affection, pressure, instead of causing pain, often yields relief.

In the Face.—The masseter muscle is sometimes affected with rheumatic inflammation, so that the patient cannot open his mouth, and great alarm is sometimes created under the apprehension of tetanus or lockjaw.

In the Neck.—Under the name of *stiff-neck*, *wry-neck*, or *torticollis*, rheumatism sometimes exists in the muscles of the side of the neck. It may occupy both sides of the neck equally, in which case the head is held stiffly erect, and steadily looking forward; but much more frequently one side only is disordered, and the head is drawn towards that side, usually more or less obliquely. While the head is allowed to remain at rest, the patient is easy, or feels only a dull aching; but every movement is exquisitely painful.

In the Parietes of the Chest—Pleurodynia.—This complaint is not unfrequent. It is a rheumatic affection of the intercostals or muscles between the ribs, and other muscles of the trunk, and is characterized by severe, acute, and generally shifting pain in the side upon taking a full breath or coughing, by soreness of the intercostal spaces upon pressure, and by the general absence of fever. It resembles pleurisy considerably in its most obvious symptoms, and when attended, as sometimes happens, by a slight febrile movement, or by an accidental cough, the diagnosis is so uncertain, that it can be made out only by attending to the physical signs. (See *Pleurisy.*) The risk of confounding the two affections is increased by the fact that, in consequence of the pain arising from the movement of the intercostal muscles, there is little expansion of the affected side of the chest, so that the respiratory murmur is less distinct, and percussion somewhat duller, than in health. As other muscles about the chest are often affected at the same time, the diagnosis is sometimes aided by the occurrence of severe pain upon attempting to twist or bend the trunk.

In the Abdominal Parietes.—This is a very rare seat of rheumatism, which nevertheless does sometimes attack the abdominal muscles, producing symptoms that might be mistaken for those of peritonitis, though distinguishable by the effect of movement, and the want of the constitutional symptoms of the former.

In the Lumbar Muscles—Lumbago.—This occupies the muscles situated in the small of the back, sometimes extending up the spine, sometimes shooting round toward the abdomen. It may be upon one side exclusively, or upon both. It is often first recognized by the occurrence of a sharp pain, as if from the thrust of a knife, upon attempting to rise from the sitting posture, or to raise a burden. When very severe, it confines the patient to bed, and in one position, from which he cannot move without exquisite suffering. In milder cases the patient can often walk, but always stiffly, and generally partially bent forward upon the hips, with the spine perfectly rigid. It is not unfrequently attended with more or less febrile action, and may even be so severe and extensive as to come, with great propriety, under the division of acute rheumatism. In such a case, however, it usually forms a part of a more extensive affection. The effects of motion, and the tenderness on pressure, sufficiently distinguish it from the violent pains of malignant fevers. From inflammation of the kidneys it differs in wanting the peculiar direction of the pain towards the groin, the retraction of the testicles, the irritation of the urinary passages, and the nausea and vomiting which characterize that disease; as also in the more decided tenderness, and greater pain on certain motions which bring the muscles of the back into play. Disease of the spine occasions also severe lumbar pains, which are sometimes increased by motion; but there is less pain upon pressure, less acuteness in the symptoms, and more or less disorder in the functions of the lower extremities, which is wanting in lumbago.

In the Hip—Sciatica.—The parts about the hip are often attacked with rheumatism, which is seated sometimes in the muscles, sometimes in the joint or in the ligaments of the

pelvis, and occasionally, also, there is reason to believe, in the neurilemma of the sciatic nerve, showing itself by tenderness along the course of that nerve, and pain, with other disordered sensations, in the corresponding thigh and leg. The simultaneous occurrence or previous existence of rheumatism in other parts, is the surest diagnostic sign of this affection, which might otherwise be readily confounded with neuralgic pains, or those having their origin in common inflammation. The steadiness of the pain, which is rather dull than acute, and its increase when the patient becomes warm in bed, are other signs of its rheumatic character. Sciatica, however, is more frequently chronic than either acute or subacute.

In the Heart.—The subacute form of rheumatism is peculiarly apt to invade the internal parts of the body. I believe that it is more frequently the origin of serious organic disease of the heart than the acute variety.

In the Alimentary Canal.—Instances of subacute rheumatism in the *œsophagus* sometimes occur, attended with a feeling of constriction, and severe pain in swallowing, but they are rare. In the *stomach* it is not uncommon, producing, according as it attacks the muscular or mucous coat, severe pain, with a sense of constriction, and great tenderness on pressure, or a sense of heat, weight, and oppression, with nausea and vomiting; and sometimes the two sets of symptoms are combined. Another not unfrequent seat of rheumatism, not sufficiently noticed, I think, by authors generally, is the *muscular coat of the bowels.* The patient complains of a constant aching in some portion of the bowel, especially of the ascending or descending colon, which is increased at times into the most violent pain, whenever the muscular coat is stimulated into contraction by the contents of the bowels, or the action of purgative medicine. Sometimes the muscle is so severely affected that it ceases to be able to contract, and obstinate constipation ensues. There is generally tenderness on pressure, within a limited portion of the abdomen. The disease may often be recognized from occurring upon the retrocession of an external

attack, or in individuals who are known to be subject to rheumatism. It differs from colic in being less decidedly spasmodic, and from ordinary inflammation of the whole thickness of the bowel, in the much less violence of the constitutional disturbance.

In the Diaphragm.—Rheumatism sometimes attacks the diaphragm; and there is probably no seat in which it is more painful and distressing. A severe pain shoots from the epigastrium to the spine, sometimes through the body, sometimes circularly along the edge of the ribs, which, in violent cases, is increased to agony by every attempt to take a full inspiration. Breathing, which is performed chiefly by the ribs, is often very difficult and oppressed, and sometimes attended with feelings of suffocation. The swallowing of food produces acute pain at the point where the œsophagus penetrates the diaphragm, and sometimes the food is rejected in consequence of the spasm thus excited. In some instances, only a portion of the muscle is affected, and the pain may be confined to one side.

The duration of subacute rheumatism is exceedingly uncertain, and depends greatly upon the treatment. It is often relieved in two or three days, and sometimes runs on for weeks or months, if neglected. In the latter case, however, it degenerates into the chronic form. Though much more readily subdued than the acute, it is much more liable to return quickly.

Causes.—The causes are the same as those of the acute variety. The complaint is very apt to result from a partial exposure to cold, as from small currents of cold air, or the uncovering, in a cold place, of a part of the body usually protected. It is said that sudden muscular movements, or violent straining, are apt to induce the disease. They probably do so sometimes when a predisposition to it exists; but, more frequently, when supposed to be the cause, they are merely the means by which the existence of the disease is first made known to the patient. When the constitutional tendency is very strong, it is probable that any thing of an excitant character may serve to bring on the local affection,

such as stimulant drinks, or heating articles of food. Some individuals have a peculiar predisposition to this form of rheumatism.

Diagnosis.—The suddenness of the attack, the severity of the local compared with the general symptoms, the sharpness of the pain upon movement when the muscles are concerned, the frequent shifting of the affection, and the utter absence of any tendency to suppuration, are characters by which subacute rheumatic inflammation may be distinguished from common inflammation occupying the same parts.

Prognosis.—This is rarely otherwise than favorable. The disease is very rarely fatal, unless when it seizes upon some vital organ, as the stomach, brain, or heart; and even then may very generally be relieved by appropriate remedies. The greatest danger is probably a sudden seizure of the muscular structure of the heart, so as to arrest its movements. Another danger is the production of chronic enlargement of that organ.

CHRONIC RHEUMATISM.

This variety of rheumatism may exist in the fibrous, synovial, or muscular tissues, but is most frequent in the joints. It may occur either as an original affection, or as the consequence of an acute or subacute attack. It is sometimes limited to a single part, sometimes extends to several; and may be either fixed or movable. Generally speaking, however, it is more apt to be fixed firmly in its original seat than either of the other varieties.

In relation to the joints, the swelling is generally not great, sometimes scarcely if at all visible, unless the synovial membrane is affected, when there is often tumefaction from the effused fluid. In old cases, however, the ligaments are often thickened, and there is not unfrequently some effusion into the cellular tissue. Redness is generally quite wanting. There is, in almost all cases, more or less pain, which is obtuse and aching rather than acute, is often increased by the warmth of the bed at night, and is usually worst in damp, chilly weather. Rheumatic patients can frequently foretell a storm from the pains produced by

the damp, cold winds that precede it. In some instances, however, there is little pain, but only a feeling of stiffness and weakness upon motion. The heat of the part is seldom increased. On the contrary, the patient often complains of chilly sensations, and these are sometimes the most unpleasant local effects of the disease.

When the muscles are affected, they often waste away, shrink, and become shortened.

In obstinate and very old cases, there is often stiffness or immobility of the joints, arising from contraction, thickening, and rigidity of the ligaments, and also, in some instances, from firm contraction or shortening of the muscles and tendons. The joints are often distorted by the same causes, especially the joints of the hand, in which the fingers are bent to one side, or abnormally extended or flexed; and it has been observed that the deformity of the one side corresponds singularly with that of the other in shape and direction. Not unfrequently, in cases of long standing, the muscles affected become almost powerless, or even quite paralyzed.

The disease may generally be relieved or cured for a time, but is exceedingly apt to return. Sometimes it perseveres steadily, in spite of remedies, rendering the life of the patient miserable, and wearing him out at last by the incessant pains. In some instances, too, suppuration takes place in the joints, the synovial membrane ulcerates, the cartilages are absorbed, abscesses form in the soft parts and discharge externally, and the patient is at last worn out by hectic fever, or the denuded ends of the bone granulate and unite, forming a stiff joint.

The duration of chronic rheumatism is altogether irregular. It may continue for months, years, or a lifetime. Many persons affected with it have intervals of comparative comfort, recovering their health more or less completely during summer, to relapse again in winter, or varying with the condition of the weather, to the changes of which they become exceedingly sensitive, so as frequently to anticipate them before they are obvious to others.

The causes of this form of rheumatism are the same as of

the acute; but the predisposition to it is not strongest in the same individuals. Age has great influence in this respect. The old are peculiarly liable to chronic rheumatism, though seldom attacked by the acute.

The complaints with which it may be confounded are common and scrofulous inflammation, and sometimes possibly paralysis of certain muscles. From the former it may be distinguished by its occurrence in individuals known to be rheumatic, its frequently shifting character, especially in the earlier stages, the absence of any tendency to suppuration, the sense of coldness which sometimes attends it, and its aggravation by wet damp weather, and by the warmth of the bed. A muscle may be deprived of the power of motion by rheumatism or by palsy, but the march of the disease is so different that, if proper investigation be made, there can be little difficulty in forming a correct decision.

NERVOUS RHEUMATISM.

Rheumatism very often assumes the form of irritation, without the least sign of inflammatory action. It may be directed especially to the nervous system, evincing itself by pain, or other disordered sensation, and by irregularities of the motive-power; or it may affect any other portion of the body, or any one of the organs, producing derangement of function in the part or organ affected. The question may perhaps be asked, How can it, under these circumstances, be known to be rheumatism? The answer simply is, that these irritations often alternate with, supersede, or are superseded by inflammatory attacks of rheumatism, without the operation of any discoverable additional cause. A patient will be attacked with a neuralgic pain in the face, dyspeptic sensations in the stomach, or colicky pains in the bowels, which will instantly cease upon the occurrence of an attack of subacute rheumatism in one of the joints or muscles, and return upon the retrocession of the latter affection. It is scarcely possible to resist the conclusion, that the same peculiar state of system, the same predisposition or diathesis, lies at the foundation of both these modes of

derangement, which are, in fact, nothing more than the expressions of the real disease, the essence of which escapes our notice.

To give a very general idea of these derangements, it is sufficient here to state, that rheumatic irritation may assume the form of neuralgic pains in any part of the body; of vertigo, dizziness, headache, tinnitus aurium, [ringing in the ears,] perverted vision, etc., when it affects the brain; of hurried or irregular breathing, and even violent dyspnœa, in the respiratory apparatus; of palpitations, oppression, and great precordial distress, in the heart; of dyspeptic sensations, nausea or vomiting, spasm, etc., in the stomach; of colicky pains in the bowels; and of painful sensation, and perverted function in the liver, kidneys, and generative organs.

The exciting causes of this variety of rheumatism are the same as of the others; but there is a different condition of system in the individuals subject to it, which determines this rather than the inflammatory forms. A predominance of the nervous temperament, sedentary habits, abstemious modes of living, and, generally, whatever tends to depress the powers of the system at large, may be considered as favoring the production of nervous rheumatism. Hence, it is most frequent in females, students, and professional men, especially those of temperate lives.

Though a painful, sometimes alarming, and in many instances a most harassing disease, it is not often really dangerous; and persons subject to it often live to an advanced age, and occasionally, after passing the prime of life, find the tendency to it to diminish or cease altogether. It is true that it sometimes seizes upon the heart, brain, lungs, or stomach with fatal violence; but these cases are rare; and when death occurs in the course of the disease, it is much more frequently from the supervention of some organic affection, than from the simple uncomplicated irritation.

Nature of Rheumatism.—Having taken a view of the different forms of rheumatism, we are now prepared to con-

sider its nature. The opinion was at one time prevalent, that this disease was dependent on a peculiar offending matter pervading the system.

Another notion is, that the disease is nothing more than ordinary inflammation, owing any peculiarities which it may exhibit to the tissue in which it is seated. But the truth is, that the disease is not necessarily inflammatory. It is often purely nervous, and no explanation of its nature is admissible which does not take this fact into consideration. Besides, ordinary inflammation, occupying precisely the same parts, presents different phenomena.

All that we know of the real nature of the disease is, that it is peculiar, and that it owes this peculiarity not to the character of the cause, but to some unexplained condition of the system, called the rheumatic predisposition or diathesis. I am inclined to the opinion that this diathesis is in itself a morbid state—in fact, the true disease, and that the irritation and inflammation by which it is recognized are merely symptoms of its full development. That the rheumatic differs essentially from ordinary inflammation is shown chiefly by its shifting character, its disposition to alternate with mere irritation or functional disorder, and the almost entire absence of any tendency to suppuration, even in the most violent cases.

Treatment.—As rheumatism is inflammation, modified, it is true, by the peculiar condition of the system constituting the rheumatic tendency or diathesis, but yet essentially inflammation, it follows that it should be treated according to the fixed principles which govern us in the management of inflammation in general, modified, as far as can be, to suit this particular variety of the disease.

In acute rheumatism, the pulse being usually full and strong, and the fever considerable, there is quite a unanimity among authors in recommending the antiphlogistic treatment, consisting, as you have already learned, of active bleeding, purging, etc.; but as this treatment has been shown not to be the best in other inflammatory diseases, it is unnecessary to go into an argument to prove that it is not the best in this; especially as even Wood admits

that bleeding won't cure the disease, or even often shorten its course, and that patients do not bear up under depletion as well in rheumatism as they do in other inflammatory diseases of the same apparent grade of action; and Tanner says: "*Venesection* will merely give temporary relief at the expense of future suffering; it increases the irritability of the heart, and consequently predisposes to rheumatic inflammation of this organ; I should as a rule never resort to it. That which I believe to be the best treatment consists in the use of sudorifics, opiates, and saline purgatives." Three objects should be had in view in the treatment of acute rheumatism—to relieve the pain, lessen the local excitement, and to remove the febrile condition. The first will be best accomplished by the use of opium, or its preparations; the second by sedative and cooling or emollient local applications; and the third by the fever syrup. My usual plan of proceeding is, to first give a pretty full dose of calomel—say ten or fifteen grains—and follow it in a few hours with epsom salts, so as to obtain a thorough operation from the bowels, and clear them of all offending matter. While this is being done, I order the inflamed part to be enveloped in flannel, saturated with an infusion of some of the bitter herbs, or mullen leaves, which I think preferable; the chloroform liniment may also be applied at the same time, by sprinkling it on the side of the cloth which is applied next to the inflamed surface each time it is renewed, which should be often. As soon as the bowels are freely evacuated, I administer a full dose of opium and quinine, viz.: two grains of opium, or one of morphine, and ten grains of sulphate of quinine; and direct a tablespoonful of the fever syrup to be given every two or three hours, but not to awaken the patient to give it: "if he sleeps, he will do well." As a general rule, I never allow my patients to be awakened out of a natural sleep to take medicine. It is best to time the remedies so that the opiate may be taken near the usual hour of going to sleep. After the first dose I rarely repeat the calomel, but order daily as much salts as will insure two or three discharges from the bowels. An equal quantity of epsom salts and cream of tartar often

answers better than the salts alone, and is more pleasant to take. After the inflammation is pretty well removed, if there remain any hardness, I order the part to be painted well, twice a day, with the tincture of iodine, and the poultice still continued.

If the disease be what has been described as subacute, instead of the active purgatives recommended above, I usually prescribe the following pill: blue-mass, comp. ext. of colocynth, and castile soap, each twenty grains; make twelve pills, and give three every night. The syrup should be given as before directed, and opium, or Dover's powder, sufficient to allay suffering and insure sleep. But bathing the whole surface, or even sponging it, with mustard water as hot as it can be borne, and then applying the chloroform liniment all along the spine and to the part that is suffering, will generally give more ease and secure a quieter night's rest than can be obtained by the use of opiates; and then the disadvantage of the constipating effects of that drug will not have to be obviated by additional purgatives; but in bad cases this may be given, and the other not left undone.

But should this, or the acute rheumatism, assume the chronic form, or if the case has been chronic from the beginning, it must be treated somewhat differently. Purgatives will only be called for to obviate costiveness, and one of the above pills at night, and a teaspoonful of salts in the morning, will usually be sufficient. The general condition of the system appears to be pretty much the same in chronic rheumatism as in scrofula, and may be removed by the same remedies. Nothing has succeeded in our hands so uniformly as the alterative syrup recommended under that head, to which the reader is referred. Much may also be accomplished by local appliances. The part should be enveloped with flannel, and bathed frequently with some highly stimulating liniment: it is best to change the applications frequently, as any one will lose its effect by frequent repetition. The reader may select from the following, or use them in succession: chloroform liniment; volatile liniment, made with equal parts of alcoholic spirits of camphor,

aqua ammonia, and olive oil; spirits of turpentine and tincture of capsicum, equal parts; spring oil, or oil of spike, and spirits of hartshorn, equal parts; or, if the parts are cold and insensible, oil of pennyroyal, oil of sassafras, and oil of juniper, each one ounce, and aqua ammonia, three ounces; this is a powerful application, and should it cause too much burning, sweet oil may be added. The patient must avoid exposure to cold and wet, or no treatment will prove successful; as much exercise should be taken in fine weather as can be borne without occasioning considerable suffering.

The treatment of *nervous rheumatism* yet remains to be given; and we approach the subject with reluctance, as we have been almost a martyr to this disease for forty years, and have never found a *cure* yet. Still, much may be done by way of temporary relief, and even procuring weeks or months of comparative freedom from the disease; but our observations and experience teach that the disease, after having once been set up in the system, is never wholly removed, but will return from time to time under the most judicious management. Every measure which tends to invigorate the system, and increase muscular power, and lessen nervous irritability, will be found advantageous in this disease; hence, the patient should take much out-door exercise in good weather, but avoid exposures and exhausting fatigue; should observe regular hours of eating and sleeping—being out at night and losing sleep always increases our suffering; the cold bath, or sponging daily the whole surface with cold water, is highly useful; medicines won't do much good. I never found them of advantage in my own case. Opiates, it is true, will give present ease, but their frequent use will injure the general health; and then they soon lose their effect by repetition. Much temporary ease can be obtained by the use of the liniments prescribed under the last head, or by the use of the flesh-brush perseveringly applied.

But those who are doomed to suffer from this disease may have the consolation of knowing that it rarely leads to fatal results, or wholly disqualifies the patient from the pursuit of business, or even pleasure; and, I have thought,

serves as a kind of safety-valve, by which excessive nervous excitement often expends itself, and prevents the development of forms of disease more dangerous, if not more annoying than it.

GOUT.

This disease is very seldom met with in its true form in this country; in fact, I have never yet been consulted in a case presenting all the characteristics of a genuine *fit of the gout* as described by English authors. In this country necessity or custom almost forces every man to engage in some form of business requiring a sufficient outlay of muscular and nervous power to ward off the development of this disease as it is often met with among the English aristocracy, who often, besides inheriting a predisposition to the disease, enjoy the means for indulging in idleness and high living calculated to develop the predisposition into active disease. But even in this country, where every man, whether rich or poor, is forced by custom or the force of circumstances to exert his muscular as well as mental energies, we often meet with forms of subacute rheumatism partaking, more or less, of the gouty character. But they are amenable to the same treatment found to succeed best in uncomplicated rheumatism, except that the use of iodide of potash is imperatively demanded. In all cases presenting gouty symptoms—namely, painful swellings of the small joints, with dyspeptic symptoms—the proper course will be light but nutritious diet, abstinence from all fermented and alcoholic stimulants, active out-door exercise in good weather; anodyne stimulants applied locally, such as chloroform liniment, spirits of camphor and laudanum, etc.; and, internally, iodide of potash, one ounce; water, one quart; take a table-spoonful after each meal, and as many pills made of castile soap, taken daily, as will give one or two motions from the bowels daily.

FUNCTIONAL DERANGEMENTS.

A MULTITUDE of ills "that flesh is heir to," many of which are sufficiently grave to destroy life, consist wholly of derangement of functions; are not necessarily connected with fever, or inflammation, or structural change, but are simply departures from healthy action, so that if death takes place, dissection will reveal no evidence of permanent alterations in the parts most implicated that would account for the fatal result.

In treating of this class of diseases, we are necessarily thrown back upon first principles, and will have to revert to those laid down in the fore-part of this work. It is there stated that *disease* consists in a broken balance in the movements of the machinery of life; that while harmony of action is maintained, there cannot be disease; if the movements be vigorous, there will be high developments of the phenomena of life, and if they be feeble, that low or weak developments of life will be manifested; but if there be harmony of action, no disease will or can be present; that the first condition merely results in the enjoyment of the zest of high-toned, vigorous existence, and the latter in a low or feeble enjoyment of life, but not connected with suffering—not even with a sense of weakness or want of vital energy: the zoöphyte, which all its life is fastened to the rock, and receives its nourishment by imbibition, unconscious that any other of its species exists; or the barnacle, which fastens itself to the man-of-war, and only changes locality by the movements of the stately ship, is perfect in its kind, and though its enjoyments must be few, yet its sufferings are equally small, and, in its natural low degree

of vital manifestations, it is no more diseased than is the captain of the noble steamer and busy crew, who, in the enjoyment of young and vigorous manhood, and excited by his position, won by deeds of worth, feels life's current flow vigorously, and enjoys a zest of life of the highest order of which God has made his noblest work capable of enjoying. There must be a broken balance, a want of harmony, to constitute disease; some parts of the machinery must run too fast, while others run too slow, and a loss of harmony of movement produced, which must necessarily result in the grating of cogs, or the casting off of bands, causing the whole machinery to run irregularly, or cease to run.

Functional disease, then, consists in an altered movement, by which the various processes or functions necessary to the well-being of the animal economy are imperfectly carried on, or performed in excess, or performed with difficulty and imperfectly. Now, we have seen that though the manifestations of vital action are manifold, and the results various, yet all proceed from the same motive-power, and are produced by the exercise of a few simple structures, widely distributed and variously combined, so as to produce apparently very different organizations, and present very diverse phenomena. The great motive-power resides in the brain and other nervous centres; the nerves are the wires or tubes through which they operate, and the messengers which convey orders and return intelligence; the capillaries are the workers that do all the drudgery, and are also the fine artificers; and the blood furnishes the material upon which they operate. Now, if the power be deficient, or be irregularly transmitted, or if the operatives are languid and feeble, and unable to perform well their task, or if the material be deficient, in either case the work will be improperly or deficiently done—it will be over-done, or under-done, or not done well.

The great principles, therefore, which lie at the foundation of all diseased or pathological action are few, and come within the comprehension of all who possess mind enough to comprehend simple causes and effects. Now, as the principles which govern diseased action are few, it follows

that the means by which disease may be cured, or morbid action corrected, need not be numerous; and hence, a few remedies fitly chosen may be made to accomplish numerous results; which serves as a sufficient apology for so often bringing forward the same means for the treatment of different diseases, and for correcting departures from healthy action resulting in apparently very different conditions of the system.

We will now proceed to the consideration of functional diseases; which will be most conveniently classed with the organs or structures in which they are manifested.

CHAPTER I.

FUNCTIONAL DERANGEMENTS IN THE DIGESTIVE OR CHYLOPOETIC ORGANS.

Under the above head will be arranged all functional derangements connected with the processes through which the morsel passes, from the time it enters the mouth, until digestion is completed and the debris cast off; including mastication, deglutition, digestion proper, lacteal absorption, and defecation; involving principally the salivary glands, œsophagus or throat, the stomach and bowels, liver, spleen, and pancreas, and the lacteal absorbents. But as nearly all the functional derangements to which these organs are subject are grouped together, or found occasionally in connection with the very complicated disease known as dyspepsia, the history and treatment of this will almost supersede a necessity for a separate consideration of each or any derangement of the separate organs concerned in digestion. We will therefore first treat of

DYSPEPSIA.

Dyspepsia, or indigestion, is one of the most common diseases we have to treat. Any thing which interferes with the healthy action of the stomach will give rise to it.

Causes.—The most frequent cause of dyspepsia is the use of food in too large a quantity, or of an improper nature; or the imperfect mastication of food. Want of exercise, excessive labor, mental anxiety, general debility, and disease of the stomach, liver, or pancreas, will also give rise to it. So, when the blood is rendered impure from any morbid poison in the system, as that of fever, cholera, etc.,

we have indigestion. It is common in Bright's disease, when the blood is contaminated with retained urea, owing to the imperfect action of the kidneys. Dr. Beaumont clearly proved, in his well-known experiments on Alexis St. Martin, that spirituous liquors were most injurious to the stomach; hence, persons in the habit of using them often suffer from indigestion. Another common cause is an error frequently committed, of not allowing a sufficient interval between the meals, to permit of the stomach doing its work and resting: for Abernethy's rule, that six hours at least should intervene between each meal, cannot be long broken with impunity.

Symptoms.—The symptoms vary, but the most constant are, anorexia or loss of appetite; a sensation of pain, weight, and fulness at the epigastrium; flatulence, or the undue collection of gas in the intestinal canal; nausea and vomiting; costiveness; furred tongue; foulness of breath; palpitation of the heart; pain in the loins; aching of the limbs; dull headache; and hypochondriasis. Occasionally the patient complains of CARDIALGIA, or heart-burn; or of GASTRODYNIA, or cramp in the stomach; or of the frequent eructation of a thin, watery, acid, or tasteless fluid, constituting what is termed PYROSIS, or the waterbrash. Pyrosis occurs more frequently in women than men, is not uncommon in advanced life, and often exists in connection with some derangement of the nervous system, or—in some instances—with organic disease of the stomach, pancreas, or liver.

There is seldom a healthy feeling of hunger in this disease, but, in place of this, the patient very commonly experiences a sensation of hollowness or sinking at the epigastrium, when the stomach is empty, which leads him to wish for food. Thirst is not unfrequent.

Eructations of wind, and regurgitation into the mouth of food or chyme, or of a sour, bitter, acrid, oily, or offensive liquid, are common symptoms.

The phenomena hitherto mentioned belong more especially to the stomach. There are also very numerous symptoms, having their seat elsewhere, which depend on

derangements either consequent upon those of the stomach, or produced by an extended operation of the same cause. Among these are various disordered sensations, such as headache, giddiness, and heaviness of the head; muscæ volitantes, and other results of perverted vision; tinnitus aurium, and other unreal sounds, (see *Sick-Headache;*) irregular pains between the shoulders, in the back, and various other parts of the body; a feeling of coldness between the shoulders; stricture, or uneasiness about the throat; and irritation in the larynx and fauces, leading to frequent attempts to clear the throat, which at length become habitual. There is often also general uneasiness or malaise, a tendency to low spirits, a feeling of indifference or of anxiety and apprehensiveness, an indisposition to exertion, irritability of temper, fretfulness, etc. The patient is apt to imagine himself affected with consumption, organic disease of the heart, or some other incurable malady. Palpitations of the heart, coming on at uncertain intervals, dyspnœa, and a short dry cough, are not unfrequent symptoms, and tend to confirm these melancholy impressions. The patient in general sleeps badly, is disturbed by unpleasant dreams, sometimes by nightmare, and awakes unrefreshed, and much depressed in mind. Sometimes, however, the sleep is sound, and affords almost the only interval of ease. The tongue is usually somewhat furred, especially in the mornings, and there is often an unpleasant taste in the mouth, as if the saliva were sour. In some cases, there is frequent hawking, with a discharge of frothy mucus from the fauces.

The bowels are almost always constipated, unless in cases complicated with chronic enteritis, or excessive secretion of bile. The hepatic function is also frequently deranged. The secretion of bile is very often diminished, giving rise to light, clay-colored, whitish, or hard and scanty stools. Sometimes it is perverted, giving a dark or black color to the passages, and more rarely is too abundant, producing vomiting of bile or bilious diarrhœa.

The *surface* is usually dry, and of irregular temperature. The feet and hands are obstinately cold, but sometimes hot

and even burning, especially at night. In debilitated cases, instead of dryness of skin, there is sometimes copious sweating. The *urine* is variously affected, sometimes scanty and high-colored, depositing a lateritious or whitish precipitate, sometimes copious, limpid, and almost colorless. The *pulse* is in some cases quite natural, in others more or less disordered, being either too slow or too frequent, or altogether irregular. In some patients it is very irritable; being slow and regular under ordinary circumstances, but thrown into great disorder by slight causes of excitement, whether bodily or mental. In such persons, it is apt to be rendered very frequent by exertion in the morning.

The symptoms above enumerated are by no means all present in every case. They are combined in almost infinite diversity; and there are scarcely two cases in which striking differences might not be observed. At first, the disease usually exhibits itself in slight paroxysms, with intervals of almost entire exemption. These attacks are little noticed, and gradually increase in duration and frequency, until at length the patient is seldom without some evidences of the disease.

The patient usually loses flesh, and sometimes becomes much emaciated, with flabby muscles, a sunken abdomen, a pale, sallow skin, and an anxious expression of countenance. The disease, however, seldom proves directly fatal. In the vast majority of cases, the patient either recovers entirely, or so far as to be liable only to occasional returns, upon a renewed application of the cause. In others, the disorder, which was at first purely functional, becomes organic; chronic gastritis is established; and the patient sometimes sinks under the combined influence of debility and irritation. The chief danger from dyspepsia, however, is, that the reduced strength of the system may disable it from surmounting other diseases by which it may be assailed. It is possible that, as maintained by Wilson Philip, functional sympathetic affections of the liver, lungs, etc., having their origin in dyspepsia, may become organic diseases, and constitute the chief source of inconvenience and danger; but my observation would lead me to the conclu-

sion that such cases are very rare. The predisposition to phthisis may be favored by the debility attendant on dyspepsia, as it is by the same condition from any other cause; but the former disease is probably seldom or never the direct result of the latter.

It is important to distinguish chronic gastritis from dyspepsia, and to be able to recognize inflammation when it takes place in the course of the latter affection. In chronic gastritis the pain is on the whole more severe, the epigastric tenderness greater and more constant, vomiting much more frequent, and the pulse more tense, and, as a general rule, more accelerated. In this complaint the tongue is frequently red, with prominent papillæ, or altered surface, which is seldom the case in pure dyspepsia. Hot and stimulating drinks increase uneasiness in the inflamed stomach, while they often afford relief to the dyspeptic; and food is in general more acceptable to the latter than to the former. When the matter vomited is mucus, or blood, or like coffee-grounds, the existence of chronic gastritis may be inferred. Febrile action and diarrhœa are also much more common in that complaint than in dyspepsia. When, therefore, in a case of indigestion, the various symptoms mentioned increase or become developed, there is good reason to believe that gastritis has supervened.

Treatment.—In the treatment of dyspepsia, the first and by far the most important indication is the removal of the causes. The measures requisite for this end embrace the regulation of the diet, the exercise, and the general habits of the patient, moral as well as physical.

Diet.—The most obvious rule in relation to diet is to avoid the use of all substances of difficult digestion. To be practically useful, however, the direction must be more precise, and embrace an enumeration of the particular substances to be forbidden or allowed. The following specification is only correct in general, for the peculiarities of individual stomachs are so numerous, that an article easily digestible by one will often prove almost indigestible by another, and vice versâ.

The patient, as a general rule, should avoid all culinary

vegetables, with the exceptions hereafter to be mentioned, all fruits, whether fresh, preserved, or pickled; all fat, salted, and smoked meats, and those which are tough, from whatever source derived. Of the particular kinds of animal food, pork, pig, veal, and domestic ducks and geese, are peculiarly difficult of digestion. The flesh of very young or of very old animals is usually less digestible than that of the same animals in the intermediate stages of life. Fish is generally deemed of difficult digestion, and most shell-fish, especially clams and lobsters, should be avoided by the dyspeptic. Of substances prepared by the culinary art, pastry; fresh, hot, and heavy bread; puddings; cakes made with butter or fat; fried meats; hard-boiled eggs; jellies; soups; gravy; and all sorts of dressings with butter, sugar, wine, etc., should be forbidden. Whatever is pasty, doughy, or disposed to form a tenacious mass with water, resists digestion, because impenetrable by the gastric juice. Sausages, and cheese of all kinds, are of difficult digestion. Butter, lard, and other fats are especially injurious to the dyspeptic stomach when altered by heat. Brown sugar, molasses, and honey, are apt to induce acidity of stomach. Vegetable acids have been found to be generally injurious; and the fruits which contain them largely should be especially avoided.

The list of allowable substances is not scanty. Among those of vegetable origin are wheaten bread, which should always be light, stale, and perfectly free from acid; crackers made without shortening of any kind; well-boiled rice; and Irish potatoes, either roasted or boiled so as to be dry and mealy. Some object to the last-mentioned vegetable, and the small, waxen, or watery potatoes which are often met with are certainly of difficult digestion; but when of good quality, they agree well with most dyspeptic stomachs. The sweet potato when dry and mealy, though sometimes flatulent, is often very acceptable, and may always be tried when the patient desires it. Tomatoes well prepared, without butter, are found to agree with many individuals, and prove useful by their laxative property. The same may be said of perfectly ripe and sweet free-

stone peaches, and perfectly ripe blackberries or dewberries. But all these fruits may, as a general rule, be placed in the category of doubtful substances.

Good fresh milk, boiled or unboiled, is usually easily digested, and forms an excellent diet for dyspeptics, especially when stronger animal food may be thought hazardous, in consequence of existing or suspected chronic gastritis. It forms a good dessert when loosely coagulated by means of rennet, and mixed with refined sugar, nutmeg, and a little sound wine. Small quantities of sweet cream may be taken with propriety, and even agree with some stomachs which most other food offends. The same may be said of pure ice-cream, flavored with vanilla. This forms a very good dessert for dyspeptics, but should always be eaten very slowly, and allowed to dissolve perfectly in the mouth before being swallowed. Good fresh butter, though condemned by some writers, has within my observation, when eaten moderately with bread, rice, potatoes, etc., proved in general perfectly innocent. But there is a vast difference in this product, and when badly prepared, or in the slightest degree rancid or musty, it is as offensive to the stomach as it is to the delicate palate. It should never be used in dyspepsia after having been subjected to any culinary process, as heat has a very injurious effect upon it.

Among the meats, tender mutton or beef, and among poultry, the common fowl or turkey, is to be preferred. The flesh of wild animals is in general more easily digested than that of the tame. Good venison is perhaps the lightest and most digestible of meats. The American pheasant and partridge, and the canvas-back duck, with many of the smaller birds, are admissible articles. But in eating all sorts of fowl, care should be taken to avoid the skin and fat, especially when they are roasted; and the fat of all the meats which have been mentioned should be rejected. Both meats and poultry should be kept for some time after being killed before cooking, so as to lessen the tenacity of the muscular fibre; but they should never be allowed to be in the least tainted. They should be either boiled, roasted, or broiled. When there are symptoms of

even slight gastric inflammation, if flesh is used at all, it should be preferred boiled.

There are other articles of animal food well adapted to dyspeptic patients, such as oysters, raw or slightly roasted; sweet-bread; the liver of calves; turtles, cooked well without butter; and soft-boiled eggs. It is highly necessary that eggs should not be overdone. They should be so prepared that the albumen may be coagulated, while the yolk remains liquid. This is accomplished by placing them in boiling water, and keeping them in it for three minutes. The yolk of eggs may also be prepared by beating it up raw with water, sugar, and a little ginger. This mixture is well adapted for those whose stomachs will not allow them to pass the whole interval between the regular meals without food. Although, as before mentioned, salted and smoked meats are usually injurious as articles of diet, very small quantities of chipped beef or venison, or boiled ham, or a little smoked herring, may be used with impunity for relish.

Condiments, such as salt, mustard, black and Cayenne pepper, horseradish, etc., should always be used with moderation. They occasionally prove beneficial by assisting digestion; and as their stimulant effects are chiefly local, they are less dangerous than alcohol; but, like all other stimulants, if abused, they diminish the excitability, and thus increase the already existing debility.

In relation to drinks, the best, upon the whole, is cool water. The vinous and spirituous liquors, though they often afford temporary relief, are positively injurious if constantly used, and always place the patient in the danger of acquiring intemperate habits. Should any one of them be employed, it should only be at dinner; and sherry or madeira among the wines, and brandy among the spirits, should be preferred. Some stomachs bear sound ale or porter pretty well, in moderate quantities. For the morning and evening meals an infusion of the chocolate nut, with a little sugar and milk, or a cup or two of not very strong black tea, may be used; though water alone, or a mixture of milk, sugar, and hot water, would perhaps be preferable.

Coffee should never be taken, unless it be a single cup at breakfast, to prevent headache in those who have become accustomed to its use.

It must be remembered, however, in regulating the diet of dyspeptic patients, that the stomach is singularly capricious, and sometimes takes fancies, which, however contrary to preconceived opinion, it may be proper to indulge. Such fancies, when they persist for a considerable time, are usually signs by which nature indicates her wants. Numerous instances have been noticed in which patients have been benefited, if not cured, by the use of articles of food which, under ordinary circumstances, are highly indigestible. Experience, moreover, will often be a better guide, in any particular case, than general precepts. Care, however, must be taken that the judgment of the patient be not biased by his inclinations or prejudices.

Almost as much depends upon the proper mode of taking food as upon the selection of the substances to be used. The patient should, as a general rule, eat at regular intervals, and three meals a day are usually sufficient. The stomach should be allowed some rest; and the habit of eating little and often through the day, as well as at bed-time, so that the stomach may be as seldom as possible quite empty, is not advisable. In some cases, when the interval between breakfast and dinner is long, and the patient suffers much from an empty stomach, a few oysters, a little egg prepared in the manner above mentioned, or some other light food, may be taken about two hours before the latter meal. Large suppers are very injurious, as they overtask the digestive organs at a time when their energy is least. Great care should at all times be taken not to overload the stomach. On this account the patient should eat slowly, as the stomach will be more likely to give the signal of satiety at the proper time, when permitted to feel the full influence of the food as it is swallowed. Besides, it is of great importance that the food should be thoroughly masticated, so as to favor its solution; and this is prevented by rapid eating. A meal should never be taken immediately after fatiguing exercise, as the stomach participates in the general

languor. The patient should not drink largely, especially at meals. Besides the injurious effects of distention, the solvent power of the gastric juice is diminished by too great dilution.

Exercise.—The great object of exercise is to equalize excitement, so that each organ may have its due supply of blood and of nervous influence. This is accomplished by a combination of passive and active exercise. By the former the viscera are especially acted on, by the latter the whole of the voluntary muscles, and the structures associated with them in function, while both affect the nervous system. Of the different kinds of passive exercise, the best, as a general rule, for the dyspeptic, is riding on horseback; the next best, riding in a somewhat rough vehicle, or over a rough road, as in one of our stage-coaches. These, however, will be found too severe for some very delicate persons, especially those in whom there is a nervous tenderness of stomach. For such persons, driving in an ordinary carriage, or travelling on railroads, or sailing may be substituted. Of the modes of active exercise, walking is best for persons somewhat advanced in life; running, leaping, etc., may be practiced by the young. Gymnastic exercises are also useful; but care is necessary to avoid the temptation of carrying them to extremes. In bad weather, and for persons who cannot conveniently leave their homes, exercise of various kinds within doors should be contrived. The ordinary household duties afford abundant opportunities for active exercise to females. When the patient cannot command the means or opportunities for riding, he may substitute the plan recommended by Halsted, or some analogous one, for giving passive exercise to the stomach. This consists in bending the body forward, and so relaxing the abdominal muscles as to allow the hands to be pressed, with their palms upward, beneath the stomach, and then, by gentle and repeated impulses with the fingers, keeping up a regular movement in that organ. It should not, however, be practiced when the process is painful, or there is any reason to suspect inflammation of the stomach. It often affords relief in flatulence.

Exercise should be as regular as possible, and properly timed in relation to the periods of eating. Violent exercise should never be taken immediately before or immediately after a full meal. In taking exercise, the dyspeptic should always stop short of fatigue. It is important that this remedial measure should not become irksome to the patient, and, therefore, that some other immediate object should, if possible, be associated with it, besides the mere promotion of health. It is always desirable to connect it with the pursuit of interest or enjoyment. Hence one of the advantages of travelling.

General Habits.—The patient should observe regularity and moderation in all his habits. Excesses of all kinds are injurious to the debilitated stomach. He should retire early to bed, and rise early, allowing from six to eight hours for sleep, and never permitting either pleasure, business, or study to encroach upon his period of rest. The sleeping apartment should be well ventilated, and mattresses used in summer instead of feather beds. Nevertheless, it would be injurious to sleep so lightly covered as to suffer in the least from cold. It is a mistake in dyspeptic individuals, to suppose that they can harden themselves in this way. Personal cleanliness should be rigorously observed; but the too frequent or long-continued use of baths, especially of warm baths, is injurious by their sedative or relaxing influence. The cold bath, or shower bath, is to be preferred when a vigorous reäction follows. This, indeed, is an excellent remedial measure in dyspepsia. But when the system is too feeble to reäct thoroughly, the tepid bath must be used, and the patient should remain in it no longer than is necessary for cleanliness. When the skin is in a cold, languid state, the warm salt-bath will often be found useful; and friction to the surface, by means of a flesh-brush or coarse towel, should be employed daily. Friction over the abdomen is highly advantageous. The patient, moreover, in employing this measure, has the additional benefit of wholesome exercise.

Relaxation from severe study, and from the cares and anxieties of harassing business, of whatever kind, is essen-

tial to the cure of dyspepsia. Yet the mind must not be left without occupation, as in no disease is it more apt to prey upon itself, when surrendered wholly to its own caprices. Innocent amusements, cheerful society, light reading, and moderate professional occupation, exercise a very healthful influence. Sources of mental depression should always, as far as possible, be removed or counteracted. All these objects can be accomplished in no other way so effectually as by travelling, which unites the advantages of exercise, pure air, relaxation from care, and agreeable excitement of the mind; and, if directed to some suitable watering-place, affords the additional advantage of an efficient medicinal agent. To render a journey permanently useful, it must be a long one; and hence a voyage to Europe, or some foreign country, and an absence of six months, a year, or more, are among the most effectual means of curing dyspepsia. It is probable that the effect produced on the stomach by the sea-sickness, and consequent abstinence, is advantageous in many cases.

Medicinal Treatment.—Two principal indications are presented in dyspepsia for the use of medicines: first, to keep the bowels regularly open, and, secondly, to make a moderate but durable stimulant impression upon the stomach; the former is to be accomplished by laxatives or enemata, the latter by tonics.

It would be desirable to maintain regular evacuations from the bowels by means of diet alone; but, unfortunately, the articles of food best calculated for this effect, such as the fruits and fresh vegetables, are inadmissible, from their difficulty of digestion and aptness to occasion acidity and flatulence. Bran bread, or bread made from unbolted flour, is not liable to this objection, and constitutes, on account of its laxative quality, an excellent article of diet for dyspeptics. It does not, however, suit all stomachs, and frequently fails in producing the effect desired. When medicines are employed, those should be selected, as a general rule, which have no tendency to weaken the stomach, but, on the contrary, unite some tonic or stimulant with their laxative power. Rhubarb and aloes are the most suitable.

They may be given separately or combined; and the most convenient period for administering them is generally at bed-time, so that they may act in the morning. Rhubarb may be used in all cases; aloes in all, when there is no tendency to piles or uterine irritation. Combination with soap is thought to render them milder, without impairing their efficacy. They are usually given in pill; but many persons are in the habit of chewing rhubarb, or of taking it reduced to powder by grating. In the latter case, it may be advantageously associated with grated nutmeg. When these medicines lose their effect by repetition, they may be mixed with a minute portion of croton oil. One-sixth of a drop will often be sufficient to communicate to them the requisite activity. I have found a teaspoonful of salts and soda, taken half an hour or an hour before breakfast, in half a tumblerful of water, to be an admirable laxative in some cases of dyspepsia. A drachm of sulphur once or twice a day is especially useful in cases complicated with rheumatism. White mustard seeds unbruised, in the dose of a tablespoonful, repeated as often, have been found to answer well in cases requiring a somewhat stimulant impression. Magnesia should be employed in cases of acidity of stomach. Mild laxative enemata or suppositories, applied daily, are sometimes usefully substituted for cathartics by the mouth. In general, however, they do not sufficiently affect the upper bowels.

Tonics must be used with caution. If largely employed, and long and steadily persevered in, there is danger that they may wear out the excitability of the stomach, and thus indirectly increase the debility they were given to relieve, while, at the same time, they may increase the danger of chronic inflammation. They should never be used as substitutes for the course of treatment above recommended, but only as adjuvants; for, if administered while the causes of the disease continue to act, they can only afford present relief at the risk of future mischief. When the stomach is placed under circumstances in which, upon being excited to the proper point by artificial means, it can execute its function duly without further aid, tonics may be advantageously

employed; but they should be omitted as soon as they are found no longer necessary. The best for the purpose are, on the whole, the purer bitters, such as columbo, gentian, and quassia. Chamomile is well adapted to mild cases. Wild cherry bark may be used when an irritable circulation, indicated by the occurrence of palpitations or very frequent pulse under slight excitements, is associated with the gastric depression. Serpentaria is applicable to cases of unusual debility; and valerian may be advantageously combined with the bitters when the patient is affected with symptoms of hysteria, or other nervous functional disorder. The infusions of these medicines may be given in the dose of a wineglassful three or four times daily. Gentian and quassia may also be conveniently administered in the form of extract. The tinctures should be employed cautiously, and only as adjuvants of the other preparations, when the stomach is very feeble. Of the mineral tonics, the chalybeates are to be preferred. Of these, the best are the pills of carbonate of iron of the U. S. Pharmacopœia. Sulphate of iron, combined with twice its weight of carbonate of soda, or carbonate of potassa, and incorporated, either in liquid mixture or pill, with honey or syrup, affords a good substitute for this preparation when it does not happen to be at hand. Subcarbonate of iron, tincture of chloride of iron, and solution of iodide of iron, are also good preparations. The chalybeate mineral waters, which usually contain the carbonate of iron dissolved by means of carbonic acid, are among the best tonics in dyspepsia. Besides the substances mentioned, sulphuric, nitric, and muriatic acids, subnitrate of bismuth, sulphate of zinc, and nitrate of silver, are sometimes used. Carbonic acid water is also an excellent tonic in dyspepsia, and usually very acceptable to the stomach, but, like all others, is liable to be abused. A current of electricity or galvanism made to pass through the stomach is sometimes useful when that organ is peculiarly torpid.

Advantage will often accrue from the combination of medicines to meet different indications. Thus, the bitter tonics may be associated with the aromatics, and, when a

laxative effect is desired, with the cathartics. An infusion of columbo, ginger, and senna is an excellent preparation, from which I have derived great advantage in dyspepsia. Rhubarb, among the cathartics, and orange peel, cloves, cardamom, fennelseed, etc., among the aromatics, may in like manner be connected with the bitters; and, when there is excess of acid in the stomach, one of the alkaline carbonates may be added to the infusion. The extracts of gentian and of quassia may be combined, in pills, with rhubarb or aloes, and one of the chalybeates, and, when a carminative effect is desired, with an aromatic volatile oil.

In relaxed conditions of the system, attended with imperfect digestion, flatulence, and looseness of the bowels, the *anodyne carminative*, recommended in a like condition in cholera infantum, is a most excellent remedy. If taken after meals, it will generally render digestion more perfect; prevent acidity and the generation of gas, and prevent the food from passing so hastily through the stomach and bowels as not to allow time for the proper changes to be wrought upon it, or its nutrient particles absorbed by the lacteals; so that the patient, though taking sufficient food, is not nourished, and the half-digested aliment, by irritating the bowels, serves to quicken their motion and continue the complaint.

But if the opposite condition obtains, and there is a feverish condition of the system, depraved appetite, and slowness of the bowels, the following formula will be best:

℞ Extract of Hyoscyamus,	1 ounce.
" " Butternut,	7 ounces.
Oil of Sassafras,	½ ounce.
Sup. Carb. Soda,	2 ounces.
Simple Syrup,	2 quarts.

Of this *anodyne alterant* the patient may take one or two teaspoonfuls after eating, and if this should not prove sufficient to keep up regular actions from the bowels, a tablespoonful may be taken at bedtime. This prescription will be found to answer a most valuable purpose in very many cases of dyspepsia, as it fulfils almost every indication which we ordinarily have to meet in the management of the disease, viz.: allays nervous excitement, eases pain, and

procures rest; neutralizes acidity; improves the tone of the stomach and bowels; excites the liver; and keeps up a regular and natural motion of the bowels. If the liver should prove to be very torpid, a blue-pill taken at night a few times, in addition to the alterative syrup, will assist it in obtaining bilious discharges, after which the alterative alone will keep it up.

A great advantage obtained by the use of the above prescriptions is, that they give immediate aid to the digestive powers, so that food in sufficient quantity to afford strength to the system can generally be taken with impunity. A lady some years since consulted the author with regard to a most distressing headache, from which she suffered daily, and had for years with little intermission: she was found to be a confirmed dyspeptic; had torpid liver and bowels; a peculiar heaviness and distress was experienced in the region of the stomach for some time after eating even ever so little, followed by a severe paroxysm of headache; in consequence of which she had abstained from food until the system had suffered exceedingly for want of nourishment. I prepared for her the anodyne alterant, and directed her to take a large teaspoonful soon after eating each meal, and a tablespoonful at night; and, as there was tenderness in the region of the stomach, a mush poultice sprinkled with mustard, made large enough to extend also over the liver as well as the stomach, was directed to be applied on going to bed, and remain until morning; and several times during the day the whole abdomen was directed to be bathed with chloroform liniment. This treatment proved so successful, that almost all suffering was relieved in a few days, and in four weeks she had gained eighteen pounds in weight. After a few weeks, the medicine was discontinued at my suggestion, and only used occasionally, when some exposure or imprudence in diet threatened a return of the disease.

IRRITATION OF STOMACH.

By this term is meant any morbid excitement of the stomach, not amounting to inflammation. Instances of disorder of this kind are exceedingly common, although not

usually associated by writers under this name, and often too much neglected in practical treatises. Though seldom in itself dangerous, irritation of stomach is in many of its forms very distressing to the patient, and, if not arrested, very often terminates in gastritis, either chronic or acute. It presents itself in a variety of forms, dependent on the tissue or function affected, the nature of the cause, and the previous condition of the stomach or the system. It sometimes affects the capillaries especially, sometimes the nerves exclusively, and often both at the same time. Though most frequently merely the antecedent of inflammation of the stomach, and very often only a secondary or attendant affection of other diseases, it yet has in numerous instances an independent existence, and therefore requires an independent consideration. The affection is often attended with a sense of fulness, weight, or uneasiness in the epigastrium, sometimes amounting to pain. The appetite is somewhat impaired, the tongue often slightly furred near the root, the stools scanty or light-colored from deficiency of bile, the complexion sometimes sallow, and the mind irritable or depressed, and disposed to view every thing in a gloomy light. The condition is one of those to which the name of bilious complaint is often vaguely applied. It is a frequent antecedent to bilious fevers, cholera morbus, jaundice, and vomiting of blood; and there is reason to believe that some of these diseases might often be prevented by its timely treatment. It occurs most commonly at the commencement or during the prevalence of hot weather, but is found at all seasons.

Irritation is often occasioned by offending matter in the stomach; the symptoms then are of a variable character, sometimes not exceeding a morbid feeling of heat, or a slight gnawing sensation, sometimes amounting to burning pain, or cardialgia, and occasionally gastralgic or spasmodic. Some of the most violent cases of spasm of the stomach that I have witnessed, have arisen from the presence of indigestible food. This uneasiness is frequently associated with nausea, and occasional but ineffectual efforts to vomit, or with eructations of fetid, sour, acrid, or bitter fluid,

according to the nature of the cause. The pulse is generally slow, sometimes more feeble than in health, the skin often cool, and the tongue either unaltered, or slightly furred towards the root, or covered with a clammy mucus. Among the sympathetic affections are often pains over the eyes, in the loins and extremities, chilliness, urticaria or other eruptive affections, and sometimes a loss of sense and motion as in apoplexy. In children and delicate females, the nervous disorder amounts sometimes to convulsions. When the sympathetic affection is considerable, the gastric symptoms are usually masked, and wrong inferences may be drawn. Under these circumstances the existence of nausea, or some tenderness on pressure in the epigastrium, will often indicate the real seat of the disease. After a variable period, either full vomiting takes place, or the contents of the stomach pass downward through the pylorus; and, in both cases, prompt relief is obtained. Occasionally, however, when the irritation has been considerable and protracted, the depression following the excitement is so great as to incapacitate the stomach, for one or two days or more, for the proper performance of its functions. Should the cause continue to act, inflammation becomes established.

Excess in drinking or eating; indigestible food; substances which from idiosyncrasy disagree with the patient; acrid medicines and poisons; the products of acid fermentation, or other chemical change in the food after it has been swallowed; excess of acid in the gastric liquors, and other acrid secretions of the stomach; bile which has ascended from the duodenum; worms in the stomach; are the most frequent agents in the production of this variety of gastric irritation. There is some little difference in the operation of these causes. Thus, indigestible food is most apt to produce spasm of the stomach, acid or other acrid matters to occasion cardialgia or heartburn, and excess of bile to provoke vomiting. The results may take place in a stomach otherwise healthy, if the cause be sufficiently intense; but when the irritation proceeds from substances used as food, it is most easily induced by eating heartily when the stomach is temporarily debilitated, as after violent

exercise, by which nervous energy is diverted from the viscera to the muscles. The character of the offending matter may often be known by the taste or color of the matter discharged by eructation. Worms are often indicated by a sense of choking, and frequeut ineffectual efforts to vomit, as if there were some foreign body in the throat.

Treatment.—This is very simple. In mild cases, abstinence or the use of a very restricted diet for a day or two will be sufficient. In severer cases, the most effectual remedy is an emetic. When the patient is disposed to vomit, large draughts of warm water, or of warm chamomile tea, will often be sufficient to evacuate the stomach. I have seen the most violent spasm, which had resisted powerful anodynes and nervous stimulants, give way immediately after vomiting produced by a copious draught of warm molasses and water. When an emetic is necessary, ipecacuanha should be preferred, and its administration accompanied with free dilution. Large draughts of warm water sometimes prove useful without vomiting, probably in part by diluting the acrid contents of the stomach, in part by promoting the peristaltic motion downward by means of the distention they occasion. After the evacuation of the stomach, an aperient may often be advantageously given; such as magnesia, one of the saline cathartics, especially the seidlitz powder, castor oil, infusion of rhubarb, etc. If the cause of irritation be an acid matter, the antacids may be resorted to originally. Magnesia is the most efficient; but the carbonates and bicarbonates of soda and of potassa, and, in cases of enfeebled stomach, the *anodyne carminative*, will prove to be of great service. (*See* CHOLERA INFANTUM.) The remedies applicable in the case of worms will be mentioned when the effects of these parasites are treated of. Should spasm continue after the removal of the cause, it must be treated by anodynes, nervous stimulants, and revulsives to the epigastrium.

Gastric irritation arising from functional or organic disorder in the spinal marrow, semilunar ganglions, or other sources of nervous supply to the stomach, is a very common affection, especially in females, and is often very inju-

riously confounded with dyspepsia. It is attended, in different cases, by almost every variety of symptom by which the stomach is capable of expressing its suffering.

It is obvious that those cases must be the most obstinate which depend on organic disease of the spine. Such cases are easily recognized. So also are those in which the spine is painful on being pressed, in the region opposite to the stomach. The most obscure cases are those in which the ganglia or nervous plexuses are the source of the mischief. These must always be more or less conjectural. It is always important, in doubtful gastric affections, to make pressure on the spinous processes of the vertebræ; as very often a seat will thus be discovered for the effectual application of remedies.

The most effectual remedy is leeching or cupping upon the spine, at the point where tenderness is discovered upon pressure. Almost instant relief is sometimes obtained in this way. It is often, however, necessary to repeat the local bleeding, and, in some cases, several times, before a cure is accomplished. When the complaint does not yield to this remedy, blisters may be applied over the spine at the spot affected; and, in cases of a chronic character, pustulation by croton oil or tartar emetic, sustained for a considerable time, will be found very useful. The diet should consist chiefly of farinaceous substances, as stale bread, crackers, boiled rice, gruels, etc., in acute cases; but, when the appetite is unimpaired, the light and most digestible kinds of animal food may be employed. The bowels must be kept regularly open by mild aperients or enemata.

Such is the connection between the stomach and other parts of the system, that it suffers more or less with almost every severe disease, wherever it may be seated. Thus, it is one of the first organs to participate in that general movement denominated fever, no matter what may be the origin of the affection. A violent injury in any part of the body is not unfrequently attended with nausea and vomiting. But the organs with which the stomach appears to have the closest connection, are the brain, the abdominal viscera, and the parts concerned in the reproductive func-

tion, especially the uterus. Of the phenomena, however, which arise through sympathy with these organs, as well as of the requisite modes of treatment, it is unnecessary to speak here; as they will be fully considered under other heads.

CARDIALGIA—HEARTBURN.

This sensation may, indeed, be considered as characteristic of inflammation or vascular irritation of the stomach, in contradistinction to mere nervous irritation. It is a very common attendant upon the presence of acrid matters in the stomach, and has been looked upon almost as diagnostic of acidity. It is to be relieved, of course, by the remedies calculated to remove the condition of which it is a symptom.

GASTRALGIA—GASTRODYNIA—NEURALGIC PAIN IN THE STOMACH.

Causes.—Gastralgia may proceed from disease of the spinal marrow or sympathetic nerve, from gout or rheumatism affecting the stomach, or from certain not very accurately defined conditions of the system, which constitute a predisposition to neuralgia in general. It not unfrequently occurs in the convalescence from acute diseases, and in debility from other causes, such as meagre diet, impaired digestion, profuse evacuations, and especially the loss of blood. Anemic and hysterical females are very subject to it. Anxiety of mind, and the habitual influence of strong and contending emotions, frequently act as predisposing causes. When the predisposition exists, the slightest cause is sufficient to bring on an attack of the pain. Any disturbing emotion, any local affection which may reäct sympathetically on the stomach, even the mildest articles of food or of drink, are capable of inducing a paroxysm.

Diagnosis.—The only affection with which pure gastralgia is liable to be confounded, is inflammation of the stomach. It wants the febrile symptoms, the great prostration, the nausea and vomiting, and the steady course which mark acute gastritis, for which, therefore, it can scarcely be mistaken. From the chronic form of the disease it is not

always so easily distinguished; the symptoms in the latter being so variable, that it is impossible to institute a precise comparison applicable to all cases. No one symptom in the following catalogue can be considered as uniformly diagnostic; but the whole, taken together, will lead almost always to a correct conclusion.

The pain in gastralgia is usually severe, uncomplicated, and often capricious, occurring irregularly, and sometimes leaving the patient altogether for a time. Instead of being increased, it is often relieved by pressure, though this is not invariably the case. In chronic gastritis, it is usually dull, often complicated with burning or other disordered sensation, more steady, seldom being entirely wanting, and almost always aggravated by pressure in the epigastrium. In the former affection, the appetite, though variable, is often unimpaired, vomiting and excessive thirst unusual, and digestion frequently as vigorous as in health; in the latter, the appetite usually suffers, nausea and vomiting are not uncommon, the patient is apt to be annoyed with thirst, and digestion is almost always impeded. The tongue in gastralgia is not unfrequently healthy, the skin cool, and the pulse quite undisturbed; while in chronic gastritis, though the same condition of these parts may sometimes exist, the contrary is more frequently the case. The neuralgic affection may be attended with various sympathetic nervous disturbances, such as dyspnœa, palpitation, restlessness, morbid vigilance, etc.; but wants the extreme emaciation and hectic symptoms which mark the advanced stage of the inflammation. The spirits in both are usually depressed, but in gastralgia are more variable, being excessively low during the paroxysms, and again bright and cheerful when the pain remits or retires. Hot and stimulating drinks, in general, aggravate chronic gastritis, while they often relieve gastralgia. In both, constipation is an almost constant attendant, unless the case is complicated with chronic enteritis, which is much more likely to happen in the inflammatory than in the nervous affection. Not unfrequently the two affections are combined in the same case, and the diagnosis thus obscured. In doubtful cases, it is safest to

treat the disease as chronic inflammation, and, if the measures employed fail, then to address our remedies to the neuralgic condition.

Treatment.—The most urgent indication, in severe cases, is for immediate relief from pain. For this purpose, anodynes must be used internally, and a strong impression made upon the epigastrium by rubefacient or epispastic applications. Opium, or some one of its preparations, is the most efficient anodyne; but other narcotics, as hyoscyamus, stramonium, belladonna, and lactucarium, separate or combined, may often be advantageously resorted to, especially when it is necessary to sustain a constant impression for a considerable time. Hydrocyanic acid has also been highly recommended; the smoking of tobacco has sometimes proved beneficial. Where a sudden but fugitive external impression is desired, a sinapism should be applied over the stomach; when the impression is to be more permanent, a blister of Spanish flies. Both indications may be met by the use of strong solution of ammonia, or paper saturated with chloroform liniment. Advantage will sometimes be found in sprinkling morphia over the blistered surface, deprived of the cuticle.

A second indication is to change that condition, whether of the stomach or of the system, upon which the predisposition to the disease depends. When the gastralgia is associated with debility, as in convalescence from febrile diseases, this object may often be effected by the use of tonics. I have seen the affection speedily give way to the pure vegetable bitters, or to quinine. The former may be given in infusion with aromatics, and a little senna or rhubarb. The latter is an almost certain remedy when the disease is regularly intermittent. In anemic cases the chalybeates are preferable. The alterative mineral tonics have enjoyed great reputation in the disease. Nitrate of silver was recommended by Dr. James Johnson; but subnitrate of bismuth has been more employed. The latter preparation should be given in the dose of from three to five grains three times a day. All these remedies may be advantageously combined with opium or the narcotic extracts. It should always be ascertained whether the disease is connected with spinal irrita-

tion, and if so, the remedies should be applied accordingly. If it be of rheumatic or gouty origin, in addition to other measures, stimulant applications should be made to the extremities. To meet this same indication, all those means should be employed which are requisite for confirming the general health, such as exercise in the open air, sleeping in well-ventilated apartments, and in summer upon mattresses instead of feather beds, relaxation from the anxieties and fatigues of business, and cheerful society and agreeable recreation when attainable.

PYROSIS—WATERBRASH.

Pyrosis usually occurs in paroxysms. It commences with a sense of constriction and pain at the pit of the stomach, which is increased by an attempt to assume the erect posture, and thus causes the patient to lean forward. The pain is often very severe, and is sometimes attended with a burning sensation. After a while, the patient discharges by eructation considerable quantities of a thin watery fluid, which is generally quite tasteless, though sometimes, probably from accidental causes, sour or acrid. Under this discharge, the pain gradually lessens, and ultimately ceases altogether. The fluid is not usually thrown off at once, but by repeated eructations, which continue for a considerable time. The attacks most commonly occur in the morning or forenoon, when the stomach is empty, but often also at other periods. When they have once occurred, they are apt to be repeated at varying intervals for a great length of time. In the intervals, the patient is often exempt from dyspeptic or other morbid gastric symptoms, thus proving that the affection is not essentially dependent upon dyspepsia or chronic inflammation of the stomach, although it may be associated with those diseases.

Causes.—The causes of pyrosis are not well understood. It occurs most frequently among those who are meagrely fed, and at the same time indulge in spirituous liquors. It is confined to no class, nor to any particular mode of life. It seldom, however, occurs before the age of puberty, or in old people. According to Cullen, its attacks may be brought

on by cold applied to the lower extremities, or by any considerable emotion of the mind, but for the most part occur without any known exciting cause.

Nature.—As to the nature of the affection, we may infer from the symptoms that it is a combination of gastralgia, or neuralgic pain of the stomach, with vascular irritation of the mucous membrane, occurring paroxysmally, and relieved at each attack by a copious elimination of fluid from the exhalent vessels of the stomach. The pain does not appear to be produced by the presence of the fluid, which is usually quite bland, but to be relieved by the production of the fluid. In this respect, it differs entirely from cardialgia, or heartburn, in which the uneasiness is excited by the irritating character of the contents of the stomach. The two affections, however, may coëxist, especially in dyspeptic cases; and in such we may have the burning pain and acrid or sour discharges, along with the paroxysms of pyrosis. The complaint is confounded by some writers with gastrorrhœa, or catarrh of the stomach. But in the latter the discharge is mucous, and proceeds probably from the mucous follicles, either inflamed, or in that relaxed condition which sometimes follows inflammation.

Treatment.—The pain may be relieved by opiates or other narcotics, conjoined, if necessary, with revulsive applications to the epigastrium. If the liquid discharged be sour, magnesia, bicarbonate of soda or potassa, or aromatic spirit of ammonia may be united with the anodyne. But this treatment is only palliative. The curative processes must be applied in the intervals. If chronic gastritis exist, the measures should first be directed to the cure of that affection. If there be no inflammation, the patient should be put upon the course of treatment, as respects medicine, regimen, and modes of life, applicable to dyspepsia. Some particular remedies, however, have been recommended as especially useful in this affection. Among these, the most prominent is sub-nitrate of bismuth, given in three or four grain doses three times a day. Nitrate of silver may also be employed with prospect of advantage. Oxide and sulphate of zinc have been recommended. Much may be

expected from sulphate of quinine freely administered, in cases entirely free from symptoms of inflammation. Dr. Caldwell states that he has known cures effected by the use of lime-water and milk, with blisters to the epigastrium.

SPASM OF THE STOMACH—CRAMP OF THE STOMACH.

By these terms is meant any painful morbid contraction of the muscular coat of the stomach. The ordinary peristaltic movement may become painful, in consequence of an inflamed or highly sensitive state of the muscular fibre, or of the parts moved by its contractions. In such cases the affection is not spasmodic. Spasm of the involuntary muscles bears the same relation to their ordinary healthy contraction that a similar affection of the voluntary muscles does to their voluntary movements. These are often painful without being spasmodic, as for example in rheumatism. To constitute spasm of the stomach, therefore, it is necessary that the contraction should not only be painful, but unusual, either in degree or direction. This disorder is very analogous to gastralgia; but in the latter there is not necessarily any unusual movement of the stomach. The two conditions, however, often coëxist.

Spasm of the stomach is characterized by a sense of pain and stricture or contraction in the epigastrium, occurring in paroxysms, with a remission or complete intermission of pain in the intervals. The stomach sometimes feels as if drawn towards the back, sometimes as if gathered into a ball. The pain varies somewhat in position, being diffused over the epigastrium, or confined to a portion of it, according as the whole or a part of the stomach is affected. Sometimes it extends up into the breast, when the œsophagus participates in the spasm. During the paroxysm, the patient usually holds himself in a bent position. Nevertheless, the pain, so far from being increased, is ordinarily somewhat relieved by pressure from without, although, after the subsidence of the spasm, the stomach is left sore and tender to external impression. This is an important fact in reference to diagnosis. All violent spasmodic action is apt to be

followed by a feeling of soreness or tenderness, as if the part had been severely pinched. Tenderness in the epigastrium, therefore, remaining after a paroxysm of gastric spasm, must not be considered as an evidence of inflammation. The pain is in various degrees, from a slight fugitive affection, which scarcely merits notice, up to the most violent of which the human frame is susceptible. Perhaps no physical agony is greater than that of the severest spasm of the stomach. Strong and determined men sometimes scream under its violence. In moderate cases, little sympathetic disturbance of any kind is experienced; the pulse and skin both remaining nearly in their ordinary state. But when the spasm is violent, a shock is extended through the nervous centres to the whole system, somewhat analogous to that which results from a sudden and severe injury. The skin becomes cool and clammy, a cold sweat stands upon the brow, and the pulse is reduced in strength so as sometimes to become fluttering, or scarcely perceptible. Indeed, the shock is occasionally fatal, the vital actions ceasing entirely under the tremendous concentration of nervous energy in the stomach. Thus death sometimes occurs from the effects of indigestible food, or of gout translated from some other organ to the stomach. Nausea and vomiting are not usual in spasm of the stomach, unless when the latter depends upon some offending matter in the viscus. In such cases, the nausea is experienced between the paroxysms, being replaced during their continuance by the more violent sensation. In the act of vomiting, the stomach often contracts spasmodically, and occasions excruciating pain.

Causes.—Whatever irritates the mucous coat may throw the muscular sympathetically into spasm, especially when there is a strong predisposition to that affection. Hence, it is frequently caused by indigestible food, such as boiled cabbage, cucumbers, etc., by substances which disagree with the stomach in consequence of idiosyncrasy, and by irritating matters in the stomach, whether the result of alteration in the food or of secretion, as acid in excess, acrid gastric juice, and bile regurgitating from the duodenum In all

these cases, the occurrence of nausea in the intervals between the spasms, and occasional eructations or abortive efforts to vomit, will sometimes serve to indicate the nature of the cause. Another common cause is the collection of air, either resulting from the fermenting food, or from a secretory act of the stomach. This will often be indicated by belching. Spasm of the stomach may be occasioned also by congestion of the portal system of veins, by irritation of the spinal marrow or sympathetic nerve, by gout or rheumatism, by cold externally applied, especially to the extremities, and by very cold water taken into the stomach when the body is overheated or perspiring. In many persons, a strong predisposition to the affection exists. We find it especially in those debilitated by improper indulgences, irregular modes of life, the long continuance of depressing emotions, or certain chronic disorders affecting particularly the nervous system. Hysterical females and gouty and dyspeptic individuals are peculiarly subject to it. When the predisposition exists strongly, very slight causes are sufficient to bring it into action.

Treatment.—This must vary with the cause, and the precise measures necessary will be indicated in connection with the complaints of which this affection is an accompaniment. It will be sufficient here to point out the remedies in a general way. If the spasm proceed from offending matters in the stomach, especially from undigested food, these should be evacuated by an emetic of ipecacuanha, which should be followed by a mild cathartic. When the affection is not severe, it will be sufficient, instead of the emetic, to administer a dose of castor oil with laudanum. If the offending matter be acid, magnesia or other antacid should be given; and the aromatic spirit of ammonia will be found peculiarly useful from its stimulant properties. After vomiting, if that should be deemed necessary, and if not, immediate recourse must be had to anodynes. In severe cases, two or three grains of opium, or an equivalent dose of laudanum, blackdrop, or one of the salts of morphia, should be given at once, and repeated every half-hour or hour till relief is obtained. The opiate may in general be given in connection

with the cathartic or antacid, when these are considered necessary. In the absence of all inflammation, or high vascular excitement of the stomach, certain stimulants, especially the nervous, such as Hoffmann's anodyne, ether, musk, and the preparations of ammonia, may be usefully conjoined with the anodyne. If the spasm be caused or accompanied by flatus, the aromatics may be freely used, as the essence of peppermint, spearmint, or pennyroyal, ginger tea, the compound spirit of lavender, compound tincture of cardamom, oil of turpentine, etc. External applications, such as have been mentioned under gastralgia, should never be neglected. The most efficient, on the whole, is a sinapism of pure mustard. Obstinate spasm of the stomach has yielded immediately to the revulsion produced by a large cupping-glass applied to the epigastrium. Should the spine be in fault, the remedies should be applied in that part. In gouty and rheumatic cases, the irritation should be invited to the extremities by rubefacient applications. To relieve the predisposition to spasm, the treatment must be directed according to the condition of the system and the particular state of the stomach. The measures recommended in gastralgia will be found useful here.

NAUSEA AND VOMITING.

The stomach throws up its contents in two different modes: first, by *regurgitation* or *eructation*, which is effected by the contraction of the stomach, assisted sometimes by the voluntary contraction of the diaphragm and abdominal muscles; and, secondly, by *vomiting*, which is the result of various combined involuntary movements, made through the instrumentality of the brain. The former is not essentially a morbid action, as it often occurs in health. It is to the latter that the following observations refer.

Phenomena.—Vomiting is very generally, though not always, preceded by the peculiar condition denominated nausea, or sickness of stomach. This is a distressing sensation always referred to the stomach, unattended with pain, and of so peculiar a character as not to admit of description. It is accompanied, in various degrees, with a feeling of gen-

eral languor and debility, a small, feeble, often irregular pulse, a pale, cool, and moist skin, general muscular relaxation, rigors and trembling, sunken features, and an increased flow of saliva, and probably also of bile. At different periods after the commencement of the nausea, varying from a few seconds to several hours, the diaphragm and abdominal muscles contract suddenly and convulsively upon the stomach, the muscular coat of which also contracts, while the œsophagus, which is ordinarily in a state of constriction at the cardiac orifice, relaxes so as to allow the passage of the gastric contents upwards. All these movements are simultaneous. In some instances, the œsophagus appears to relax only partially, or not at all; and then those ineffectual efforts to vomit take place which are denominated retching. Occasionally the nausea continues long, and is very distressing, without the occurrence of either vomiting or retching; and, in rare instances, vomiting appears to come on suddenly and unexpectedly, without any preceding nausea, or at least with a degree of it so slight as not to attract notice. During the act of vomiting, the return of the blood from the head is impeded by the contraction of the muscles, and there is consequently flushing of the face, with swelling of the external parts of the head, and a feeling of fulness and distention in the temples, which is sometimes painful. Apoplexy has resulted from the pressure made on the brain in the act of vomiting. The pulse becomes slower and fuller, probably in consequence of this pressure. The stomach sometimes contracts so violently as to produce a painful feeling of spasm. When the vomiting subsides, the patient is generally left in a state of universal relaxation, with a soft pulse, a moist skin, and a disposition to sleep.

Causes.—The most common immediate cause of vomiting is inflammation or irritation of the stomach. The result equally takes place, whatever may be the cause of the inflammation or irritation, whether offending matter in the stomach, vicissitudes of temperature, congestion of the portal veins, rheumatic or gouty disorder, translated cutaneous affections, spinal irritation, or direct sympathy with other organs in a state of inflammation. Evidence is very

often afforded, as to the precise cause, by the nature of the substances vomited. If these be excessively sour, very acrid, or very bitter, the vomiting may in general be inferred to proceed from acid, bile, or other offending matter in the stomach; if they consist of mucus, or of substances swallowed not in themselves irritating, it may, for the most part, be ascribed to the morbid state of the stomach itself; and whether this be inflammation or irritation, direct or sympathetic, must be decided by the symptoms. But the ejection of bile must not always be considered as a certain evidence of its presence in the stomach previous to the commencement of vomiting, for the pressure on the gall-bladder during vomiting, and the probable increase of the hepatic secretion during nausea, may cause an increased flow into the duodenum, the action of which viscus, as well as that of the stomach, is often inverted in emesis. Disease of the abdominal viscera, and of the uterus, is very apt to occasion vomiting. In these cases, it may result from a direct extension of irritation to the stomach, or from an impression made by these organs intermediately upon the brain. There seems to be a state of the nervous system, resulting from various causes, which disposes to that cerebral action essential to vomiting. Such a state results from violent spasm of internal organs, as of the biliary ducts, the ureters, and the bowels; from severe injuries produced by external violence, as by blows, falls, and sometimes even by surgical operations; from the loss of blood, the use of the warm bath, and other causes which induce faintness; from the depression attending the cold stage of idiopathic fevers; and from certain peculiar influences disturbing to the nervous system, such as occur in exanthematous fevers, pregnancy, and unaccustomed motions of the body, as in sailing, swinging, riding backwards in a carriage, etc. Disorders of the brain itself very frequently produce nausea and vomiting. Obstinate vomiting is one of the most characteristic features of hydrocephalus. Concussion and inflammation of the brain are frequently attended with it, as are also various functional derangements of that organ, producing giddiness or swimming of the head, cephalalgia, etc.

It would appear, from what has been said, that vomiting cannot always be considered as arising from gastric irritation, but that, on the contrary, it is not an unfrequent attendant upon great depression of the system. Even direct depression of the stomach itself would seem to be capable of producing it. Thus, draughts of tepid water often occasion nausea and vomiting, probably by their relaxing or depressing influence; for the same quantity, either hot or cold, does not produce the same effect, proving that it is not by the stimulus of distention; and the temperature, being about the same as that of the stomach, cannot be the exciting cause. When the liquid is taken either hot or cold, the direct stimulus of the heat in the one case, and the indirect stimulus of the cold in the other, obviates the depressing influence of the liquid.

Treatment.—It is obvious that, in the treatment of vomiting, regard must be had to the pathological condition upon which it depends, and remedies employed accordingly. Gastric inflammation or irritation must be relieved by the means pointed out under these heads. When the spine is in fault, the remedies must be addressed to that part. When the vomiting proceeds from the retrocession of external diseases, attempts should be made to recall the irritation to the surface or extremities by rubefacient, pustulating, or blistering applications. When it is a purely sympathetic affection, the real disease should be attacked in its proper seat. But there are certain modes of treatment, applicable to sick stomach under most circumstances, which it is proper to mention here, in order to avoid frequent repetitions.

Whenever there is reason to suspect that the vomiting is sustained by offending matters in the stomach, as, for example, when small quantities of bilious matter are thrown up at each effort, the stomach should be well cleared out by the free use of warm water, warm chamomile tea, chicken water, or other mild liquid, assisted, if necessary, by a moderate dose of ipecacuanha. In cases wholly free from inflammation, this treatment will often prove effectual, even though the vomiting may not depend upon the presence of an irritant. A tumbler-full of very warm water sometimes

immediately settles a disturbed stomach, without being vomited.

After the stomach has been thus cleansed, if such cleansing should be necessary, the most efficient remedy, beyond all comparison, is opium. This may be given in the form of pill, of tincture, or of camphorated tincture, [paregoric.] The dose may be from the sixth of a grain to a grain of opium, or an equivalent quantity of its preparations, and may be repeated every hour or two, if required. Should the remedy be rejected by the stomach, it may be given very advantageously by enema. An anodyne injection of from thirty to sixty drops of laudanum, with two fluid-ounces of thin starch, or some mucilaginous liquid, is a most excellent remedy in vomiting. Should this be resisted, half a grain of morphia may be sprinkled upon a small blistered surface upon the epigastrium. A blister may be made in a few minutes by wetting paper with chloroform liniment or aqua ammonia, and applied smoothly to the surface.

Next to the influence of opium in efficiency, is, probably, revulsion to the epigastrium by means of rubefacients or blisters. An elegant cataplasm for the purpose may be made with equal parts of powdered cinnamon, cloves, ginger, and pepper, incorporated by means of warm spirit and some adhesive substance, as honey or molasses. Flannels moistened with a decoction of Cayenne pepper in spirit, or with the oil of horsemint or of turpentine, may also be used, although the unpleasant smell of the latter oil is an objection to it. But the most effectual of the rubefacients is a sinapism made with pure mustard and water, which should be kept on from half an hour to an hour. When a strong and lasting impression is required, a blister should be resorted to.

Lime-water and fresh milk, in the dose of a tablespoonful of each every half hour, hour, or two hours, is very useful in cases where there is not too much excitement, where some nutriment is required, and especially where the stomach rapidly creates acid.

SICK-HEADACHE.

This is very often essentially a gastric affection, and therefore may be considered in this place.

Symptoms.—The pain in the head sometimes comes on abruptly, but is usually preceded by certain premonitory symptoms, such as confusion of head, vertigo, dulness, depression of spirits, irritability of temper, and perversion of hearing or sight, especially of the latter. The pain in the head is usually slight at first, and gradually increases until it becomes intense, but sometimes is violent from the outset. In the great majority of cases it is felt in the forehead, over the brow, or in the eye, sometimes only on one side, but generally on both, and not unfrequently the eyeballs are sore to the touch. In some instances the pain extends over the whole head, or is felt more especially in the back of the head or neck. It is often attended with chilliness, flushes of heat, and other deranged sensations; but the pulse is almost always natural or nearly so in frequency, and thus at once serves to distinguish the case from an attack of fever. The tongue is in some instances slightly furred. After the pain has continued for some time, nausea occurs, by which it is somewhat relieved; and there is often an alternation of severe headache and nausea for a considerable time, the latter gradually increasing, until at length vomiting takes place. The matters discharged are usually sour or bitter, but sometimes tasteless, especially if some antacid medicine has been taken. After vomiting freely, the patient usually falls asleep, and, having rested for several hours, awakes free from pain, or nearly so. Should a dull pain in the head remain, it generally disappears after a meal, or upon exercise in the open air.

Causes.—In persons predisposed to sick-headache, slight causes are sufficient to induce an attack. It is brought on by the use of indigestible or acescent food, excess in eating or drinking, great bodily fatigue, loss of rest, extraordinary mental inquietude or exertion, exposure to cold when warm and perspiring, and by whatever else is capable of producing a morbid accumulation of acid in the stomach, or an excess-

ive secretion of bile. The predisposition, for the most part, consists in debility of stomach, and a peculiar state of the nervous system, which renders the brain especially sensible to gastric irritation. Hence, all the causes of dyspepsia are predisposing causes of sick-headache. (See *Dyspepsia.*) It may be proper to mention here, as among the most prominent, the habitual use of coffee and tea, especially of the former. These nervous stimulants, when long and freely employed, have the indirect effect of diminishing the energy both of the stomach and brain, by the state of excitement which they produce in these organs; and their operation often escapes notice, because their immediate effect is not unfrequently to relieve, for a time, the affection resulting from their habitual use.

Treatment.—This must be considered in relation first to the paroxysm, and second to the interval. The attack may often be prevented by proper measures, applied upon the first appearance of the premonitory symptoms. The previous experience of the patient will generally serve as an index to the nature of the offending cause. If this be acid in the stomach, as happens in the majority of cases, from half a drachm to a drachm of magnesia will be found among the most effectual preventives. If bile be the offending cause, some quick and gentle cathartic will be best adapted to the case; as half an ounce or an ounce of epsom salts, one or two seidlitz powders, or a little infusion of senna.

But if it is felt to be coming on, a full dose of opium should be given, and the patient should retire to bed, in a dark room, and keep as quiet as possible. He will thus sometimes fall asleep and awake much relieved, without vomiting. Bathing the temples and forehead with some aromatic spirit, as spirit of lavender or cologne water, sometimes affords relief; but the speediest and most certain relief may be obtained by the use of chloroform liniment, or chloroform alone.

In relation to the treatment in the intervals, little need be said here. All those measures are indicated which are calculated to strengthen at once the stomach and the nerv-

ous system. These have been fully treated of under dyspepsia. Among them none is more important than the removal of the predisposing causes. It has been stated that the habitual use of coffee and tea, especially the former, is one of the most influential of these causes. I have repeatedly known cures of sick-headache to be effected by an entire abstinence from coffee, where other means had failed; and one striking instance occurs to me in which an individual, after suffering long and severely with the disease, obtained an entire exemption by refraining from the use of black tea, which was his only indulgence. We cannot, therefore, too strongly urge an abstinence first from coffee, and, if this should prove insufficient, from tea also, even from black tea. These beverages, as has been stated, often operate advantageously as remedies in the paroxysm; but it is in consequence of those very properties which render their habitual use poisonous to some persons. Tobacco and alcoholic drinks, if habitually indulged in, should also be given up.

In cases where the paroxysm returns at regular intervals, as sometimes happens, sulphate of quinine will often effect at least a temporary cure. The *anodyne alterant* (see *Dyspepsia*) will be found to be a most excellent remedy in this disease; but should the liver be obstinately torpid, a mercurial pill, or a grain of calomel, should also be given every night, or every other night, followed by a laxative next morning, and continued till the evil is corrected.

MORBID APPETITE.

There are two forms of morbid appetite—one in which the desire for food is abnormally increased, the other in which it is directed towards unusual objects. In the former case, it is said to be *voracious;* in the latter, *perverted* or *depraved.*

Voracious Appetite—Voracity—Canine Appetite—Boulimia.—There are various degrees of this affection, from a slight increase beyond the point of health, to a constant and insatiable craving for food. Cases are on record in which the patient when awake was never content unless eating, and in which an almost incredible amount of food was consumed.

Dr. Mortimer, in the 43d volume of the London Philosophical Transactions, relates the case of a boy of about twelve years, who, in six successive days, took a quantity of different kinds of food weighing three hundred and eighty-four pounds eight ounces, equal to about sixty-four pounds a day. In such cases, when food is withheld, there is a feeling of uneasiness, inquietude, or even faintness, with an indescribable vacuity or sinking of stomach, a sort of craving void, which impels the patient to seize voraciously upon every thing in the shape of food, however unsuitable or ordinarily repulsive, and even to gnaw his own flesh if not indulged. Individuals with this propensity are usually thin and even emaciated; although, in some instances, the food serves the purpose of an increased nutrition, and enormous obesity is the consequence. In cases of the former kind, the food is sometimes vomited, and sometimes passes quickly through the bowels, without undergoing digestion. Occasionally it is rapidly digested, and is converted into chyle and blood, but merely serves to supply materials for hemorrhage, or some excessive excretion, as that of perspiration or urine.

If it be considered that hunger is a sensation which, though always referred to the stomach, and often originating in that organ, may be equally produced by impressions sent to the brain from the nutritive vessels all over the body, when in want of supplies for their proper function, it will be easily understood that voracious appetite may depend either upon a disordered condition of the stomach, or upon the state of the nutritive function in general.

Little need be said upon the treatment of this affection. In cases arising from malformation of stomach, a cure is not to be expected. As a palliative, compression of the abdomen by a tight band has been recommended. When the complaint depends upon any morbid state of the system or an organ, our remedies must be addressed to the primary disease. Direct irritation of the stomach must be combated in the modes already detailed. Perhaps, in some cases, advantage may be derived from sustaining nausea for a considerable time by means of emetic medicines in small

doses. In the excessive appetite which follows long fasting, and attends convalescence, it is often highly important to restrain the propensity; as much danger sometimes results from over-indulgence. In the gluttony of habit, on the contrary, there is danger from too sudden a withdrawal of food. The system sometimes sinks rapidly and unexpectedly in such cases, as from the sudden withdrawal of stimulating drinks. Hence gluttons, like drunkards, are in peculiar danger from diseases which take away the appetite, and thus cut off the usual supply. The practical inference from this fact is, that any attempt to cure an established habit of over-eating should be gradual.

Depraved Appetite—Pica.—In this affection there is a desire, often irresistible, for strange articles of food, for substances wholly unfit for food, and sometimes for things offensive or even disgusting. These whims of the appetite are exceedingly diversified, and there is scarcely any object in nature to which they may not be directed. Thus, instances are on record of persons having a propensity for spiders, toads, serpents, candles, paper, earthy matters of various kinds, as clay, chalk, and magnesia, and even hard, wounding bodies, as stones, pieces of glass, pins, needles, and blades of knives. Such vagaries are often temporary, and of little importance; but they are sometimes durable, and cease only with the life of the individual, who falls a victim either to the disease of which the depraved appetite is merely a symptom, or to the chronic gastritis, and general disorder of health, which its indulgence produces.

Like voracity, this affection may depend upon some form of gastric irritation, upon inscrutable changes in the innervation of the stomach, upon cerebral disorder amounting to a species of insanity, or upon mere habit. The form of depraved appetite which seeks indulgence in the eating of clay, chalk, etc., is probably connected with acid in the stomach, which is neutralized in the substance swallowed. It is possible that, in some of those cases in which hard, rough, or pointed bodies are swallowed, the propensity depends upon that insupportable feeling of vacuity in the stomach, which is relieved by the pain or excitement these

bodies may produce. Depraved appetite occurs most frequently in children, and in chlorotic, hysterical, or pregnant females. The whimsical fancies of pregnancy are universally known.

The general observations upon the treatment of voracious appetite are applicable here. To obviate, as far as possible, every observable disorder of function is the chief indication. In cases strictly and exclusively stomachic, an emetic followed by cathartic, antacid, and tonic medicines, with wholesome digestible food, and the various other measures calculated to invigorate the stomach, are the remedies from which most advantage may be anticipated.—(See *Dyspepsia.*)

DIARRHŒA.

Those cases are denominated diarrhœa in which the alvine evacuations are more liquid, frequent, and copious than in health, without being hemorrhagic or dysenteric in their character.

The affection is rather a consequence of certain pathological conditions than itself a disease. These conditions are various, and sometimes even opposite; as is rendered obvious by a consideration of the different agencies which may produce increased evacuation from the bowels. A simple increase of the peristaltic action may have this effect, without the coöperation of any other cause. It may also result from an elevated excitability of the bowels, causing them to receive a stronger impression from their usual contents than in health, or from an increase in the quantity or stimulating quality of the ingesta acting upon the ordinary excitability, or from a condition of the digestive organs, allowing bland materials introduced into the stomach to undergo changes which may render them irritant. Again, irritation or inflammation of the intestinal mucous membrane may produce secretions which, from their quantity or quality, shall prove purgative; and in one portion of the alimentary canal, matters may be generated which shall operate in this way upon another portion farther down.

The biliary and pancreatic secretions, moreover, may be so altered as to excite the bowels to increased action, though the latter may be in perfect health. Finally, debility of the mucous membrane may allow the elimination of fluids, which, by mere distention of the bowel, shall cause the muscular coat to contract more rapidly. These are very different conditions, yet all attended with diarrhœa. The only common circumstance is increased peristaltic action.

With this diversity in the sources of diarrhœa, there is an equal diversity in the attendant symptoms; and there is scarcely any phenomenon common to all the varieties except those mentioned in the definition. The evacuations may be very few, not exceeding two or three daily, or so frequent that the patient scarcely satisfies one call before he experiences another. There is generally more or less pain before the evacuations, which are almost always followed by relief; but in some cases no pain whatever is experienced throughout. Along with the discharge is occasionally a very disagreeable sinking sensation in the abdomen, with a general feeling of exhaustion or faintness, a cool skin, and a feeble, irregular pulse. This condition, however, is almost always temporary. Diarrhœa is sometimes attended with fever, which is generally an indication of inflammation, or very high and extensive irritation of the mucous coat. But in the great majority of cases there is no fever. The skin is usually dry, and the urine scanty. Every possible diversity exists in the degree, duration, and danger of the complaint. It may be quite trivial, getting well in a day or two without aid, or may run on for months and even years, resisting every variety of treatment. Many such cases were found among the soldiers who returned from the Mexican war. In some rare cases, death occurs suddenly from great exhaustion, even while the patient is on the stool. But more commonly, a fatal termination is preceded by a slow emaciation and gradual failure of strength. Very protracted and fatal cases are generally connected with tuberculous or cancerous lesions of the bowels, organic disease of the liver, or a scorbutic state of system. In

simple diarrhœa, whether acute or chronic, without organic lesion, the prognosis is almost always favorable, provided proper treatment can be applied.

Treatment.—This must vary according to the character of the disease. In relation to the treatment of diarrhœa, the propriety of inspecting the evacuations cannot be too strongly urged. When the complaint depends simply upon increased peristaltic movement, it usually subsides with the cessation of the cause. Should it require treatment, from five to ten drops of laudanum, or a fluidrachm of the camphorated tincture of opium may be given, and repeated if necessary. In the crapulous form, the loaded bowels may be relieved by a dose of castor oil or other mild cathartic, and the diet afterwards reduced in quantity, and made to consist of materials which yield a comparatively small proportion of excrement, as meats, milk, and farinaceous substances.

The treatment for inflammatory diarrhœa has already been detailed.—(*See* ENTERITIS.) In diarrhœa of irritation, respect must be had to the cause. If slight, without discoloration of the passages, without febrile excitement, and with little or no griping, the case will in general require scarcely any thing more than a regulation of the diet. If the presence of irritant substances in the bowels is suspected, a dose of castor oil should be given with or without laudanum, according as the pain is considerable or otherwise. When the stools are green or of a sour smell, or other evidence of acid in the stomach is presented, magnesia, or a mixture of this with rhubarb, should be substituted for the oil. Purging, however, has been abused in this complaint. It should not be carried farther than is necessary to meet the indication above presented. In some rare cases, collections of feculent or foreign matters in the bowels, somewhat difficult to dislodge, sustain a vexatious diarrhœa, which can be removed only by a removal of the cause. In such cases, the cathartics already mentioned may be repeated, or others more active resorted to. When worms are the offending cause, calomel is the most efficient cathartic, and should be given in connection with vermifuge

medicines. These cases, however, are rare; and, in general, a single dose of the cathartic is sufficient. In cases not requiring laxatives, and in others, after the proper use of these medicines, opiates are the most efficient remedies. If the irritation be moderate, and wholly unattended with arterial excitement, from five to ten drops of laudanum, with or without a little camphor water, or a fluidrachm of camphorated tincture of opium, repeated two or three times a day, will generally arrest the disease. When acid continues to be generated, prepared chalk or prepared oyster-shell should be added to the anodyne; or, if there should be a slight febrile action, carbonate or bicarbonate of soda or potassa should be substituted; or equal quantities of salts and soda, given in broken doses, will be still better. If by these means the discharge is not arrested, and the patient complains of little or no pain, one of the vegetable astringents may be added, such as logwood, kino, catechu, rhatany, geranium, or pure tannic acid.

In the form of diarrhœa attended with white passages, it is often highly important to stimulate the liver as speedily as possible. When the stools are small, and the patient not materially weakened, from five to ten grains of calomel may be given at once. In children two or three years old, one or two grains of calomel may be given every two hours until it produces some effect on the bowels, care being taken not to exceed four or six grains. The happiest effects sometimes immediately result. But if the passages are somewhat copious, or the patient feeble, the calomel should be given with opium or paregoric, and followed by some preparation of rhubarb, or a little castor oil, if the bowels should be confined. The alterative plan may afterwards be followed by giving smaller doses of the mercurial with opium or Dover's powder. When the evacuations are alarmingly copious and exhausting, I have found great advantage from small and frequent doses of hyd. cum creta, or blue powder, say three grains every hour, given in a teaspoonful of the anodyne carminative, or in fever syrup, or mucilage.

In diarrhœa of debility, in which may be included most

cases of chronic diarrhœa not attended with pain or fever, after correcting the biliary secretion if deranged, we may resort to astringents and tonics, of which a vast variety have been recommended. Among the vegetable astringents, may be enumerated, besides those already mentioned, galls, oak bark, blackberry and dewberry root, black alder, alum root, pomegranate, etc.; among the tonics, columbo, gentian, quassia, simaruba, angustura, cascarilla, etc. These may be tried, separate or variously combined, in decoction or infusion, flavored with cinnamon or orange peel, and with some hope of advantage. But, on the whole, more good may be expected from the mineral substances belonging to the same classes, especially alum, acetate of lead, sulphate of copper, sulphate of zinc, nitrate of silver, and the various chalybeates; but the fever syrup, taken after meals, will generally prove of more advantage than any other remedy. When stimulation is requisite, good port wine should be preferred. For the treatment especially applicable to the diarrhœa of chronic enteritis, the reader is referred to that disease.

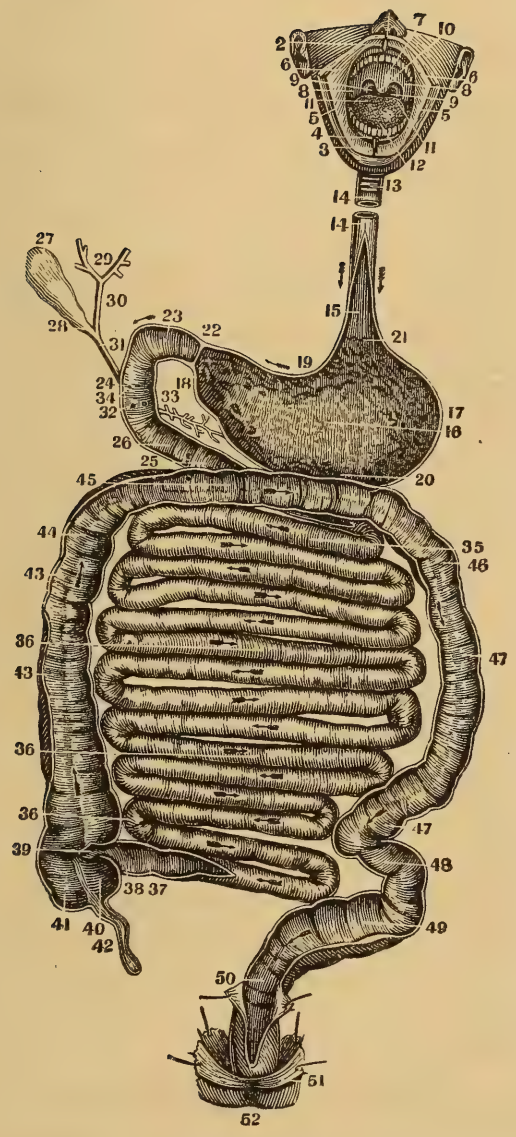
There are various accessory measures which may be resorted to, in any of the forms of diarrhœa. Of these the warm bath, in acute cases when the skin is warm and dry; the hot bath, and especially the warm salt-bath, in chronic cases when it is cool and pale, are perhaps the most efficient. They may be used with great advantage in the cases of children. A bath of decoction of oak bark has been recommended in similar cases. Much benefit may also be expected from a flannel bandage about the body. Frictions to the surface are decidedly useful, when the cutaneous circulation is languid, and rubefacients or blisters to the abdomen may be tried in obstinate cases. Anodyne enemata are sometimes highly serviceable in allaying the intestinal irritation. Warm clothing, with flannel next the skin, is important. This precaution is too often neglected in children, whose feet, legs, and arms are apt to be exposed unprotected to the changes of temperature, which they are less able to bear than adults. Regular exercise should not

be neglected in chronic cases, when the patient is in a situation to take it.

Diet.—Attention to diet is indispensable. In many cases, indeed, no other remedial measure is necessary, especially when the disease has originated from improper food. In infantile diarrhœa, it is important to ascertain whether the milk of the nurse is healthy, and, if there is reason to suspect that it is otherwise, to substitute another nurse, or to remove the child from the breast altogether. The farinaceous substances, such as stale or toasted bread, water-crackers, and boiled rice, constitute a suitable diet in the early stages of diarrhœa of irritation. Milk is admissible in mild cases. Farinaceous drinks may be employed when the irritation is considerable, and especially when the stomach participates in it. Fresh vegetables and fruits should, as a general rule, be avoided. Whatever is eaten should be thoroughly masticated. For infants, fresh milk, diluted with water, and thickened with arrow-root or pulverized water-crackers, constitutes a good diet; but, when there is fever or evidence of inflammation, the food should consist exclusively of mucilaginous or farinaceous liquids. In the more advanced stages, milk, broths, and boiled meats, with fresh butter and cream, may be allowed; and in diarrhœa of debility, this kind of food should be given from the commencement. In many chronic cases, an exclusive milk diet will often alone effect cures. The dietetic rules applicable to dyspepsia should be observed during convalescence. (See *Dyspepsia.*)

COLIC.

Colic is characterized by pain in the bowels, usually more or less paroxysmal in its character, associated with constipation, and occurring independently of inflammation either of the mucous or peritoneal coat. Pathological conditions essentially different are included in the above definition; hence writers usually enumerate many varieties of colic, as cramp, bilious, flatulent, lead, etc., but all depend upon spasm, without which there can be no colic; and, as the



1. The Upper Lip, turned off the Mouth.
2. Its Frænum.
3. The Lower Lip, turned down.
4. Its Frænum.
5.5. Inside of the Cheeks, covered by the lining Membrane of the Mouth.
6. Points to the opening of the Duct of Steno.
7. Roof of the Mouth.
8. Lateral Half Arches.
9. Points to the Tonsils.
10. Velum Pendulum Palati.
11. Surface of the Tongue.
12. Papillæ near its point.
13. A portion of the Trachea.
14. The Œsophagus, (gullet.)
15. Its internal surface.
16. Inside of the Stomach.
17. Its greater extremity or great Cul-de-Sac.
18. Its lesser extremity or smaller Cul-de-Sac.
19. Its lesser Curvature.
20. Its greater Curvature.
21. The Cardiac Orifice.
22. The Pyloric Orifice.
23. Upper portion of Duodenum.
24.25. The remainder of the Duodenum.
26. Its Valvulæ Conniventes.
27. The Gall Bladder.
28. The Cystic Duct.
29. Division of Hepatic Ducts in the Liver.
30. Hepatic Duct.
31. Ductus Communis Choledochus.
32. Its opening into the Duodenum.
33. Ductus Wirsungii, or Pancreatic Duct
34. Its opening into the Duodenum.
35. Upper part of Jejunum.
36. The Ileum.
37. Some of the Valvulæ Conniventus.
38. Lower extremity of the Ileum.
39. Ileo-Colic Valve.
40.41. Cœcum, or Caput Coli.
42. Appendicula Vermiformis.
43.44. Ascending Colon.
45. Transverse Colon.
46.47. Descending Colon.
48. Sigmoid Flexure of the Colon.
49. Upper portion of the Rectum.
50. Its lower Extremity.
51. Portion of the Levator Am Muscle.
52. The Anus.

A VIEW OF THE ORGANS OF DIGESTION, OPENED IN NEARLY THEIR WHOLE LENGTH.

A portion of the Œsophagus, (gullet,) has been removed on account of want of space in the figure; the arrows indicate the course of substances along the canal.

prominent symptoms and the treatment are the same in all, these distinctions become unnecessary.

Symptoms. — The pain of colic occurs usually in frequently returning paroxysms, with irregular remissions or intermissions; but, in some instances, is continued and almost uniform, for considerable periods. During the exacerbation, it is often exceedingly severe, so as to cause even persons of fortitude to groan or cry out. It occurs most commonly about the umbilicus, though not unfrequently in other parts, and sometimes over the whole abdomen. It is described as twisting, rending, pinching, etc., and is often attended with a feeling of spasmodic constriction. The patient is for the most part extremely restless, frequently changing his position, turning from one side to the other, sitting up in bed, or rising and walking about the room with his body bent, and his hands frequently pressed against the abdomen. The muscles of the abdomen are sometimes spasmodically contracted, either in knots, or so as to produce a general rigidity of the anterior parietes. The violence of the pain occasionally depresses temporarily all the vital actions, producing paleness of the skin, cold sweats, a shrunken countenance, and a feeble pulse. When very sudden in its attack, it may produce faintness, and even temporary insensibility, and in infants frequently occasions general convulsions. It is often relieved by pressure on the abdomen, but not uniformly so. When the violent pain has ceased, a feeling of soreness is generally left behind.

The pain, in true colic, is always accompanied with constipation either as cause or effect; and when this is overcome by medicines, not unfrequently ceases. In certain cases, however, it continues without abatement, notwithstanding the operation of cathartics.

Along with the pain and constipation there is often vomiting, but this is by no means constantly present. The stomach occasionally participates with the bowels in the spasmodic pain. The pulse is generally either healthy, or somewhat depressed. Occasionally, however, the disease is originally associated with inflammation, or this condition ensues in the course of it, or there is high irritation in some

neighboring organ. Under these circumstances, a febrile condition may be developed.

Colic, in the great majority of cases, yields readily to suitable treatment. In some instances, however, the constipation persists and the disease assumes the most alarming character, in spite of all that can be done. The vomiting is now frequent, every thing taken into the stomach is rejected, the action of the bowels themselves is inverted, and even feculent matter is discharged from the mouth. Along with these symptoms, are a swollen, tense, and tympanitic abdomen, hiccough, great anxiety, cold sweats, a feeble pulse, and a general expression of the last degree of prostration. This condition is denominated *ileus* or the *iliac passion*, and is frequently, though upon insufficient grounds, treated of as a distinct disease. It is the closing stage of the severest forms of colic, and is often connected with some irremovable mechanical obstruction. It may occur, in fact, in any case in which, no matter from what cause, whether spasm, or partial paralysis of the bowel, or obstruction, the alvine contents cannot find their way downward. Even ileus, however, is not always certainly fatal. Patients have in numerous instances recovered under apparently desperate circumstances; and hope and consequent efforts should never be abandoned, unless when some insuperable obstacle, such as a cancerous closing of the bowel, is known to exist.

Colic has no fixed duration, sometimes terminating in a few hours, and sometimes running on for two or three weeks.

Diagnosis.—The complaint with which colic is most likely to be confounded is strangulated hernia. In fact, the only difference between this and some forms of colic depending on mechanical obstruction, is that the former presents certain external characters by which it can be recognized, and may be relieved by the timely application of surgical means. But this distinction is of the highest importance, and the possible existence of strangulated hernia should be borne in mind, in every case of severe or obstinate colic, and a close examination instituted. Many lives have been

lost from want of attention to this caution. From mucous enteritis colic may be distinguished by the constipation which attends it; from both this and peritonitis, by the more paroxysmal character of the pain, by the relief frequently derived from pressure, by the absence of fever, and by the restless movements of the patient.

The objects to be obtained in the treatment of colic are, to relieve pain and move the bowels.

When the pains are moderate, and dependent upon flatulence or mere exposure to cold, without the presence of irritating solid or fluid matter in the bowels, relief may often be quickly obtained by the exhibition of moderate stimulants, especially of those which are rather local than general in their action, such as the aromatic oils, infusions, and tinctures. A cupful of hot infusion of ginger, cloves, or calamus; from fifteen to thirty drops of the essence of peppermint or spearmint, dropped on sugar, or diffused in sweetened water; or from one to four teaspoonfuls of paregoric or Bateman's drops, will usually be found efficient. When the complaint has originated in exposure to cold, the feet may be soaked in hot water, or held before a hot fire; and this simple remedy will often give relief without other means.

In severe cases of the same kind, or in such as have resisted the above treatment, a full dose of opium or some one of its preparations should be given, and repeated at intervals of one, two, three, or four hours, according to the urgency of the symptoms, until the pain is moderated, or decided narcotic effects are experienced. The above-mentioned aromatics, or even more powerful stimulants, may be advantageously associated with the opiate, especially when the system sinks under the severity of the pain. Under these circumstances, laudanum may be given with tincture of camphor, oil of turpentine, oil of juniper, aromatic spirit of ammonia, sulphuric ether, or even musk, when the stomach is the seat of the spasm. In cases complicated with hysteria, infusion of valerian, or tincture of assafœtida, may be given with the stimulants mentioned.

The anodyne and stimulating remedies should be accom-

panied, or soon followed, by some quick cathartic, especially castor oil, which is, beyond all others, adapted to these cases. A fluidounce of the oil, with twenty-five or thirty drops of laudanum, given in peppermint water, will very often effectively meet all the indications.

At the same time, external means should not be neglected. The chloroform liniment is the best, and will often alone relieve the disease at once; but other means may also be used. Strong friction over the abdomen sometimes proves very serviceable, by aiding in the expulsion of flatus. Warm fomentations, anodyne and emollient cataplasms, and, in urgent cases, hot oil of turpentine, applied by means of a folded flannel moistened with it, and even a large sinapism over the abdomen, may also be employed.

When the pain arises from irritating matter in the stomach, which may be inferred to be the case if the attack commence soon after eating, or if the patient be affected with nausea or retching in the intervals of the spasm, full vomiting should be promptly induced, either by copious draughts of warm water or warm chamomile tea, or by an emetic dose of ipecacuanha or mustard water. The most violent and threatening cases sometimes yield immediately to this simple remedy, after powerful anodynes and stimulants have been employed without effect. The attention of the reader cannot be too strongly directed to this fact.

If there be reason to suppose that undigested food, acrid secretions, feculent accumulations, or any other irritating substance in the bowels, are the cause of the spasm, the indication for alvine evacuation is still stronger than in other cases, and this should be kept prominently in view. Should castor oil not act speedily, or be rejected from the stomach, recourse may be had to the infusion of senna with epsom salts. When the stomach is very irritable, calomel is often preferable to other cathartics, being retained when almost every thing else is rejected. Whatever purgative is used should be given in a full dose, and then nothing else swallowed for some time. If the irritating matter in the stomach or bowels be acid, magnesia should either be substituted for the other cathartics, or given in conjunction with them;

and it has been observed that mild laxatives of this character sometimes operate, when more powerful purgatives serve merely to increase the spasmodic constriction, and to provoke vomiting. A good laxative mixture for the purpose consists of magnesia and manna, mixed with strong fennel-seed tea. I have several times succeeded in stopping the vomiting, and moving the bowels, after all the usual remedies had failed, by giving the most oily portion of *hen broth*, highly seasoned with salt and black pepper.

To hasten the action of the cathartics, or to supply their place when they are rejected from the stomach, or from other cause fail to operate, purgative enemata are of the utmost importance. Indeed, in some very bad cases, they constitute our chief reliance. The milder should be first employed, and afterwards, if necessary, the more powerful, their strength being increased at each successive repetition. After failure with the common injection, consisting of olive oil or lard, common salt, and molasses, of each a tablespoonful, mixed with a pint of warm water; the operator may resort successively to castor oil, infusion of senna, jalap, extract of colocynth, etc., each in three or four times the quantity usually given by the mouth, and diluted with water so as to measure a pint or more. Oil of turpentine, in the quantity of from half a fluidounce to two fluidounces, mixed with half a pint or a pint of water by the intervention of the yolk of eggs, forms an excellent enema in severe cases. When the spasm is dependent on flatulence, or connected with hysterical disorder, the greatest advantage may be expected from a drachm of assafœtida rubbed up with water.

CONSTIPATION.

By this term is indicated a condition of the bowels in which the stools are less frequent or less in quantity than in health. Cases in which the intestines are entirely closed against the passage of fæces, in consequence of some mechanical impediment, are treated of under the head of obstruction.

Symptoms.—In deciding as to the existence of constipa-

tion in any particular case, it is necessary to take into consideration the interval at which the alvine evacuations habitually occur, in the healthy state of the individual. Most persons have one passage in each period of twenty-four hours; but some have two or more daily, others only one every third or fourth day, and instances are occasionally met with in which the interval is extended to one or even two weeks, without apparent disadvantage. It is probable, however, that, in these latter cases, a close examination would discover derangements sufficient to prove that the long suspension of the evacuations was any thing but a healthy state of the function. In general, constipation may be said to exist when the passages occur less frequently than once a day. But a person may be very seriously constipated, notwithstanding that his evacuations are quite regular in the period of their recurrence, if they be of insufficient quantity. It not unfrequently happens that a portion of the feculent matter which ought to be discharged at each stool is retained, and an accumulation thus insensibly takes place, which at length becomes manifest by the great inconvenience it occasions.

The fæces in constipation are usually harder and dryer than in health, and not unfrequently come away in knotty lumps, with much straining and a painful distention of the anus. These lumps are occasionally covered with a white or bloody mucus, and are of different color, sometimes natural, sometimes blackish, and sometimes light or clay-colored, indicating a deficiency or total absence of bile. When not pointed out by the diminished number or apparent condition of the stools, the affection may be suspected to exist, if the patient complain of a sense of weight or oppression in the abdomen or at the fundament, a frequent but ineffectual disposition to go to stool, flatulence, colicky pains, distention of the abdomen, and nausea with or without vomiting. Attention to these points is the more important, as in some cases of great fecal accumulation, whether in the rectum or higher up in the colon, the irritation of the bowel gives rise to occasional mucous discharges, tinged with fecal matter, and having a very offensive fecal odor; or small quantities

of the liquid contents of the bowels are forced around the mass, or through an opening existing in it, and discharged per anum, so as to simulate diarrhœa. Such a condition is peculiarly apt to occur in old people, and has not unfrequently been treated as diarrhœa, to the great detriment of the patient. If attended by the above symptoms, or some of them, constipation should be suspected, and a close examination instituted. If the feculent mass be lodged in the rectum, it will at once be detected by introducing the finger through the anus; if in the colon, it will often be obvious in the form of a hard tumor or tumors in the abdomen. There is reason to believe that such masses have not unfrequently been mistaken for organized tumors. The impossibility of introducing an injecting pipe far into the rectum, or the great resistance made to the entrance of liquids through the instrument, often leads to the detection of these accumulations. The quantity of feculent matter which has sometimes accumulated in constipation is enormous. A case is recorded in the *Archives générales*, (iv. 410,) in which thirteen and a half pounds were found in the intestines. The length of time, also, during which patients sometimes sustain a complete want of alvine dejections is astonishing. From one to two weeks is no uncommon period, in the experience of most practitioners, and cases are on record in which the patient has survived months of suffering from this cause. But, in most of these cases, the dejection per anum has been replaced by a vomiting of fæces, so as to prevent a fatal distention. Generally speaking, should the constipation not yield to appropriate treatment, symptoms of an alarming character come on in the course of a few days, and the case ends fatally, after a longer or shorter period of much and various suffering, with occasional remissions and exacerbations, as temporary relief is obtained from vomiting.

Causes.—Constipation is either occasional, arising from some temporary cause, or protracted and habitual. In both cases, its pathological condition must consist in either, 1, a mechanical impediment to the passage of the alvine contents along the bowels; 2, a diminished contractility of the mus-

cular coat, or a diminished susceptibility of the intestines to the influence of the usual alvine stimuli; 3, a deficient supply of these stimuli; or, 4, a combination of two or more of the conditions mentioned. The causes of the affection must, therefore, be such as are capable of inducing these conditions.

Among those which occasion mechanical impediment, are solid masses formed out of the ingesta, or by precipitation from the intestinal liquids; spasmodic or permanent stricture of the bowels; the encroachment of variously organized tumors upon their calibre; and strangulation of the intestines, as in hernia, intussusceptio, and twisting of some portion of the tube. These will be more particularly considered under *obstruction of the bowels.*

The causes which impair the contractility or susceptibility of the bowels, or both, are of more importance in relation to our present subject. These operate more especially upon the colon, though their influence is also felt throughout the intestinal tube. Torpor of the colon is one of the most common conditions in habitual constipation. Unable to contract sufficiently on the feculent matter, or unduly insensible to its presence, the bowel becomes distended by the accumulation which takes place, and, under the distention, suffers a still further diminution of its power and sensibility. The causes of this condition are numerous. They are, for the most part, the same as those which produce the analogous condition of the stomach existing in dyspepsia; as sedentary habits, excessive mental occupation, sensual indulgence of all kinds, morbid diversion of the blood and nervous energy to other organs, the use of narcotics and especially of opium, diseased conditions of the brain and spinal marrow, and, in fine, whatever debilitates the system generally, and consequently involves the bowels. Old age is attended with a diminished susceptibility of the alimentary canal, and is therefore very subject to constipation. Habit also has a powerful influence, and is indeed one of the most frequent causes of the complaint. By means of our control over the sphincter ani, we are endowed, to a considerable extent, with the power of regulating the alvine dis-

charges, and of resisting the solicitations of nature at inconvenient seasons. This power is too apt to be frequently exercised, and especially by females. The bowel is thus habituated to the presence of the feculent matter, feels less and less its wholesome stimulation, and at length ceases to be excited into action. Habitual constipation is a necessary result. The preparations of lead have a directly paralyzing effect upon the bowels; and obstinate costiveness is therefore an almost uniform attendant on colica pictonum, or lead colic.

Of the causes which impair the stimulant properties of the intestinal liquids, the most common is perhaps a diminished or suspended secretion of bile, or any thing which impedes its access to the bowels; the bile being one of the most energetic alvine stimulants provided by nature. Hence the frequent deficiency of the bilious color in the evacuations. The same may possibly be true to a certain extent of the pancreatic liquor, and is certainly so of the intestinal mucous and serous secretions. Hence the influence of excessive discharges from other organs, as from the skin and kidneys, in producing costiveness. Hence, too, the action of astringents, which diminish or arrest the intestinal secretion.

Many of the causes above enumerated operate doubly, impairing the contractility and sensibility of the bowel, while they diminish the amount of healthy stimulus by checking secretion. Such especially are those which act through the medium of the brain and spinal marrow. Excessive exercise often produces this effect by directing the energies of the system to other parts. A disposition to constipation is a very common attendant upon a long and fatiguing journey.

Treatment.—Occasional attacks of constipation must be met by cathartics, proportionate in their activity to the difficulties of the case; the milder being first employed, under ordinary circumstances, and the more energetic resorted to after these have failed. Castor oil is, from its combination of mildness with quickness and efficiency, one of those best adapted to ordinary cases. Sulphate of mag-

nesia and the other saline cathartics may also be used, and are especially applicable to solid fecal accumulations, in consequence of the copious serous secretion they induce, which penetrates and breaks down the impacted mass. Senna tea combined with the salt adds to its efficiency by the energetic influence which this cathartic exercises upon the muscular coat.

Should the purgative not operate in due time, it should be aided by enemata, which sometimes become indispensable in consequence of an irritability of stomach which precludes the use of most cathartics by the mouth. The reader is referred to the article on COLIC for an account of the substances which may be used in this form. Perhaps, upon the whole, the most safe and at the same time efficient, in cases of great obstinacy, is weak or mild soapsuds thrown up the bowel in very large quantities by means of a self-injecting apparatus, and repeated so as gradually to soften and wash away the feculent matter. Any desirable quantity may thus be introduced into the bowels, if care be taken, by twisting a towel round the pipe and pressing it against the fundament, to aid the contractile power of the sphincter. Advantage may occasionally result from introducing the water directly into the colon through a long gum-elastic tube, passed high up into that bowel. When the fæces are impacted in the rectum, the assistance of the finger, a scoop, spoon-handle, or some similar instrument, introduced per anum, becomes necessary to break up and discharge the solid mass. Other measures may be employed in aid of those mentioned, as friction over the abdomen, warm vapor to the fundament, and the application of cold externally, either by ice to the palms of the hands and soles of the feet, or by a stream of cold water allowed to fall upon the abdomen. Spasmodic stricture of the bowels has sometimes given way under this latter measure, after resisting purgatives and enemata.

In *habitual constipation*, a somewhat different course must be pursued. Attention must here be especially paid to the removal of the cause. Efforts should be made by the patient to establish the habit of regular evacuations by

daily attendance at the privy, though it is important that he should avoid severe straining, which often gives rise to hemorrhoids or prolapsus ani. Moderate exercise, regular habits of life, relaxation from intense mental occupation, change of air and of scene, all have a favorable effect by contributing to the restoration of tone to the bowel. Frictions over the whole surface of the body, and the occasional use of the cold or shower-bath, contribute to the same end; and whenever the excess of any function may be found to divert the due supply of vital energy from the colon, this excess should if possible be corrected. The use of all narcotic substances, including green tea and coffee, should be abandoned when there is reason to believe that the complaint depends on torpor of the intestines.

The regulation of the diet is highly important, and this alone will frequently be sufficient to restore the proper action of the bowels. The food should in general be easily digestible, and such as is not calculated to yield a large amount of feculent residue.—(*See* DYSPEPSIA.) An exception to this rule may sometimes be made in favor of substances having laxative properties; but discrimination is necessary. Laxative articles of diet are apt to be of difficult solubility in the stomach, and are not all adapted to a dyspeptic state of that organ. Such as are of this character should therefore be avoided, or used cautiously, in constipation associated with dyspepsia. Bran bread, however, or some other preparation of wheat flour containing bran, may often be employed with great advantage in this case. When the stomach is not dyspeptic, fresh and dried fruits are highly useful. Indeed, it is not uncommon for persons disposed to costiveness to be entirely free from this condition at those times of the year when fruits are in season. The different edible berries, peaches, pears, apples, melons, etc., may be taken as freely as the stomach will admit without inconvenience; and tomatoes, used as a vegetable at dinner, have been found highly beneficial even by dyspeptic persons. In the winter, the imported fresh fruits, such as grapes and oranges, and the dried fruits, such as dried peaches, prunes, figs, etc., may be substituted. Other laxative articles of

diet applicable to cases in which the digestion is vigorous are brown sugar, molasses from the plantations, honey, olive oil, rye or Indian meal in the form of mush, eaten with molasses, etc. Broths are sometimes preferable under similar circumstances to solid food. An exclusive diet of milk has sometimes appeared to produce very obstinate constipation, and this fact should be attended to in the treatment of children.

When constipation is found to be connected with deficient secretion of bile, a calomel purge may be given at first, and afterwards the anodyne alterant (*see* DYSPEPSIA) given in tablespoonful doses after each meal, and assisted, if necessary, by a teaspoonful of salts, or one or two seidlitz powders, in the interval. Active purgatives should never be habitually given, as they further impair the sensibility of the bowels.

Sulphur is adapted to cases as well of feeble as of vigorous digestion, and, as it produces unirritating passages, may be usefully employed in piles. In consequence of its alterative properties, it is an excellent laxative in the costiveness of rheumatic and gouty individuals. It is often associated with magnesia in dyspeptic cases, and with cream of tartar in inflammatory piles. Its disadvantages are that it is apt to occasion griping, and in time imparts odor to the breath and secretions.

Some have employed enemata or suppositories as substitutes for cathartics by the mouth, administering them daily, or every other day, for a long time together. The mildest substances should be selected; as flaxseed tea or other mucilaginous liquid for injection, and hard soap or solidified molasses for introduction in the solid form. But both are liable to the objection that they concentrate in one part of the bowels the irritation which the laxative medicine spreads, in a comparatively diluted state, over their whole track, while they do not so effectually evacuate the upper portions of the canal.

But laxatives either by the mouth or rectum should be employed only as adjuvants to a properly regulated regimen, and should be suspended the moment that they

are no longer necessary. Care should also be taken to administer them in doses no larger than is essential to the end desired.

They should always be given on an empty stomach, as they thus operate more speedily and with less uneasiness. Half an hour or an hour before breakfast, an hour or two before dinner, and at bedtime without previous supper, are the proper periods. Given at bedtime, they will not act until morning, and the patient will experience little or no inconvenience during the night; while he thus escapes the annoyance and inconvenience of their operation during the day. This, therefore, upon the whole, is the most appropriate time.

Various other measures have been employed in habitual costiveness. The *smoking of tobacco* has in some persons been found to obviate constipation, though in others it occasions it when used in excess, by impairing the sensibility of the digestive tube. *Friction* to the abdomen with rubefacients, coarse flannel, or the flesh-brush; *tepid or cold affusion* upon the loins; and *leeches* or *cups to the spine* when the constipation may be supposed to have its origin in disorder of the medulla spinalis, or spinal marrow, have been recommended.

OBSTRUCTION OF THE BOWELS.

This term, as here employed, implies the existence of some mechanical impediment to the passage of the contents of the bowels. The obstruction sometimes comes on slowly, with the ordinary symptoms of constipation, the patient experiencing gradually increasing difficulty in obtaining evacuations, until they cease. In many instances, however, the attack is sudden and altogether unexpected. It often happens that, for a few days after the cessation of discharges, no great inconvenience is felt; but sooner or later, and sometimes immediately, the patient begins to complain of uneasiness in the abdomen, attended frequently with a desire to go to stool, and bearing down efforts which are either quite ineffectual, or produce only slight, bloody, mucous or feculent passages, without affording relief.

Cathartics are taken without effect, and enemata, after evacuating occasionally small quantities of fecal matter, come away as administered. The discharges which thus occur spontaneously, or are obtained artificially, consist only of matters contained in the bowels below the point of obstruction; and care should be taken that they do not lead to false inferences as to the nature of the affection. Distention of the abdomen now comes on, with flatulent eructation, severe spasmodic pain, great restlessness and anxiety, and at length nausea and vomiting, so that substances taken into the stomach are instantly rejected, and medicines cannot be retained. Symptoms of inflammation, as tenderness upon pressure, a quick pulse, and furred tongue, are often mingled with those of obstruction. Should relief not be obtained, troublesome hiccough occurs; the vomiting not unfrequently assumes a stercoraceous or bloody character; disury, with deep red urine, is added to the other symptoms; the belly becomes enormously distended and tympanitic, the respiration oppressed, the face bathed in sweat, the skin pale and clammy, the extremities cold, the pulse exceedingly feeble, and the countenance haggard; and the patient sinks, completely worn out and exhausted, death being frequently preceded by delirium. This, however, is not the uniform result. The vomiting of fæces sometimes affords temporary relief; the worst symptoms disappear, to occur again when the bowels become again loaded; or the obstruction may be partially removed by an effort of nature, and again return; and a course of suffering and exhaustion, alternating with partial relief and reäction, may continue for months, or even years, ending at last in death, or in a complete removal of the obstruction, and recovery.

In cases presenting the above symptoms, a close examination of the abdomen should be made, in order to ascertain whether the cause of the phenomena may not be *strangulated hernia*. There is reason to think that death has frequently occurred from a neglect of this precaution.

Dissection after death exhibits the intestine very much distended—in some instances enormously so—above the place of obstruction. Marks of inflammation are frequently

observed, and sometimes those of gangrene. According to Burne, when the obstruction depends upon a purely mechanical cause, and not upon feculent accumulation arising from functional derangement of the bowel, the fæces are always found soft—a provision of nature which tends to prolong life by enabling the bowels to relieve themselves until the passage becomes absolutely closed.

Causes.—One of the most frequent causes of obstruction is *an accumulation of impacted fæces.* This, though the result of a preëxisting functional derangement of the bowels, becomes itself, when so considerable as to close the passage, and to resist the peristaltic movement, the chief source of mischief; and the obstruction, therefore, may be strictly said to be mechanical. This is the form of the complaint which is least dangerous, and most easily relieved by proper measures. A case is mentioned by O'Beirne, in which the patient had been without an evacuation from the bowels for nearly six months, in consequence of a mass of solid excrement in the sigmoid flexure, and yet was relieved by a stimulant injection thrown high up into the rectum. Such accumulation may be supposed to exist when the symptoms of obstruction have been long preceded by those of habitual constipation, without any evidence, from the appearance of the stools, of the existence of stricture. The means of detecting it have been already detailed.

Another not uncommon cause of obstruction is the *formation of solid concretions* in the bowels. They originate in various sources. Insoluble substances taken largely and frequently as medicines sometimes concrete in the bowels, held together by a cement of animal matter or calcareous salt, and frequently mixed with indigestible portions of substances used as food.

Permanent stricture of the bowels is a third source of obstruction. This appears sometimes to originate in a spasmodic stricture becoming permanent by inflammatory adhesion; but in most instances it depends on a thickening of the parietes of the bowel, and a consequent diminution of its calibre.

Intussusceptio, or *invagination* of the bowel, is a frequent

and fatal cause of obstruction. This consists of the intro duction of one portion of the intestine, by inversion, into the portion immediately above or immediately below it, thus producing, in many instances, a complete closure of the cavity. The upper portion is generally received into that below it, but not invariably so, the inversion sometimes taking place from below upward. The extent of the invagination varies from a few lines to a foot or more. It occurs not unfrequently in more than one part of the bowels in the same case, and probably arises from a spasmodic constriction of the entering portion of the intestine. There is reason to believe that it frequently takes place during colic, and other spasmodic intestinal affections, without producing serious effects, being relieved by the spontaneous movement of the bowels. The diagnosis of intussusceptio is at first always uncertain. It may be suspected when the symptoms of obstruction come on suddenly, without previous disorder, or as the consequence of an attack of colic, or the administration of a dose of active purgative medicine, and when at the same time a tumor, not previously existing, can be felt in any part of the colon.

Organic tumors, formed exterior to the bowel, may sometimes so diminish its calibre as to produce obstruction; but this result is rare, the impediment being seldom so great as altogether to prevent the passage of fæces.

Treatment.—The first object in any particular case of obstruction is, if possible, to ascertain the cause, so that the treatment may be modified accordingly. But when this is very obscure, or altogether uncertain, as very often happens, that plan should be adopted which is most likely to be useful in curable forms of the complaint. As a general rule, the following course of treatment is recommended.

If the pulse and constitution admit, and especially if symptoms of inflammation exist, blood should be taken freely from the arm, and leeches applied to the abdomen or the anus; a full dose of opium should then be given, and warm water poured perseveringly upon the bowels. (See Peritonitis.) Spasm of the bowel, which, if not the cause of the difficulty, may greatly aggravate it, may thus be

relaxed, while the dangers from inflammation are obviated. Purgatives may at the same time be resorted to, as recommended for occasional constipation; and these should be aided by suitable enemata. For the composition of the enemata, the reader is referred to the article upon simple spasmodic colic. But, in relation to the use of purgatives, some caution is requisite. When the vomiting is very obstinate, and especially when it has become stercoraceous, there is strong evidence that the peristaltic movement of the bowels is exerted to its utmost limits; and the only effect of powerful and drastic cathartics would probably be to increase the existing irritation or inflammation, and still further to aggravate the vomiting. The reparatory processes which nature might be disposed to institute may thus possibly be interfered with, and a curable case rendered incurable. At the beginning of the treatment, active purges may be employed; but, when found unsuccessful, they should not be urged under the circumstances mentioned. Effervescing aperient medicines, or the saline cathartics given in small doses, should be preferred, as more acceptable to the stomach, and calculated to direct downward the already excited peristaltic action.

The repeated injection of large quantities of warm water into the bowels by means of a forcing-pump, as recommended in obstinate cases of constipation, is one of the most efficient remedies. If the obstruction consist in fecal masses or other concretions, it may thus be loosened, broken down, and gradually brought away; if in intussusceptio or twisting of the bowel, there may be some hope, in the one case, of pushing up the invaginated intestine by the force of the stream, provided adhesions have not been formed, and in the other of untwisting the rotation by an impulse opposite to that which produced it. To insure its full effect, however, the fluid should be introduced by means of a tube passed as high as possible into the bowel. Even the ordinary purgative and stimulant injections prove much more efficient when introduced in this way.

Efforts for the relief of the patient should never be abandoned so long as life continues. If one measure fail, another

should be tried, and nothing which affords any reasonable prospect of advantage should be neglected; for success has often rewarded the efforts of the practitioner in these cases when there scarcely seemed to be ground for hope. When the strength of the patient begins to fail, it should be supported by stimulants and nutritious food. Wine-whey, carbonate of ammonia, egg beat up with wine, milk-punch, animal broths, etc., may be employed. Lime-water and milk in small and frequently repeated doses will sometimes lie upon the stomach when other nutriment is rejected. Opiates should be administered throughout the case, if required to give ease or produce sleep. In low states of the system, it may be proper to employ the purgative tinctures, as those of rhubarb, aloes, senna, and jalap, etc., preferably to other forms of cathartic medicine. In those cases which run on for months, it will be necessary to watch their progress carefully, in order to meet any offered indication, and favor the recuperative efforts of nature.

A few remarks may be made in reference to particular cases of obstruction. Should the complaint depend upon fæces or concretions lodged in the rectum, the aid of the finger or of instruments should be resorted to. The latter, if cautiously used, may be even applied to similar obstructions at the lower extremity of the sigmoid flexure. If there be reason to suppose that magnesia has concreted in the bowels, acidulous liquids should be given with the purgative. When the obstruction depends on stricture of the rectum, resort should be had to the bougie, unless in cases of scirrhus or cancer, in which this instrument can do no good, and may prove injurious by tearing the easily-lacerated structure. In permanent impediments of this kind, the best plan is to administer frequently small doses of the saline cathartics, so as to keep the passages in a liquid state, and thus prevent irritation. The use of laxative mineral waters has been found very beneficial, under such circumstances, in alleviating the pains and protracting the life of the patient. If there is strong reason to believe in the existence of intussusceptio, twisting of the bowel, or other form of internal strangulation, there may possibly,

under peculiar circumstances, and in cases otherwise desperate, be some propriety in opening the abdomen and removing the mechanical impediment; at least, the question of an operation may be entertained. A successful case of the kind is referred to in Dr. Eberle's Practice of Medicine, (2d ed., vol. ii., p. 341,) quoted from Hufeland's Journal for February, 1826.

SPASM OF THE ŒSOPHAGUS.

This is a morbid muscular contraction of the tube, producing more or less difficulty of swallowing.

Symptoms.—The spasm generally comes on suddenly, often, for the first time, during a meal. Upon an attempt to swallow, the food is arrested, and is either rejected immediately and with force, or is retained for a time, and then rises by regurgitation. The former event is apt to occur when the stricture is near the upper extremity, the latter when it is near the lower. Occasionally, after the food has been a short time in contact with the stricture, this gives way and allows it to pass into the stomach. In some instances, solids can be swallowed better than liquids, and the reverse is sometimes the case; but in general any sort of food is sufficient to excite the spasm, when the morbid susceptibility exists. Severe pain often attends the spasmodic action, and the irritation occasionally extends to the larynx or lungs, producing much embarrassment of respiration, with a feeling of impending suffocation. Even where no effort at deglutition is made, there is frequently present a sense of constriction, and, in some cases, a feeling as of a ball ascending the throat, or moving from one part to the other. This is the globus hystericus of older writers. Hiccough and vomiting sometimes accompany the affection. Its duration is exceedingly various. An attack may consist of a single paroxysm, lasting only a few hours, or the spasmodic action may continue with exacerbations and remissions, and occasional complete intermissions, for months or years. Like most other nervous affections, it sometimes assumes the regular intermittent form.

From organic stricture, the only complaint with which it

can be confounded, it may in general be readily distinguished by the suddenness of the attack, by the occasional absence of all the symptoms, so that the patient can swallow easily, and by the other evidences of nervous disorder with which it is frequently attended.

Causes.—Irritation of the mucous coat, from whatever cause, may produce the spasm when a predisposition to it exists. It is sometimes excited by inflammation of the œsophagus. Among the causes may be mentioned acrid substances swallowed, cold drinks during perspiration, partial exposure to cold air, violent and depressing emotions, the operation of the imagination, and the influence of disease existing elsewhere, as of dentition, organic affections of the larynx, stomach, and uterus, and inflammation of the upper part of the spinal marrow. The predisposition usually consists in an excitable state of the nervous system, such as exists in hysteria, hypochondriasis, and generally in an anemic debilitated condition of body.

Treatment.—The indications are first to relieve the local affection, and secondly to correct the predisposition. The first is answered by remedies suited to relax the spasm directly, and to diminish the nervous excitability of the part, so as to prevent the disposition to its recurrence. If inflammation exist, it should be removed by the means already indicated. If the affection be purely nervous, recourse may be had to narcotic cataplasms, as of tobacco, henbane, or hemlock, to acetate or sulphate of morphia upon a blistered surface, to rubefacients, pustulating substances, or a seton applied to the back of the neck, and to the internal use of anti-spasmodics and narcotics, such as assafœtida, valerian, camphor, opium, henbane, and hemlock. Much good is said to have resulted from very cold drinks, and even ice is swallowed by the patient.

To meet the second indication, remedies must be employed calculated to remove the disease of other organs with which the spasm may be associated, and to correct any existing morbid state of system. These remedies are detailed elsewhere. It is sufficient here to mention, that it is usually desirable to invigorate the general health by

chalybeates or other tonics, exercise, fresh air, a nutritious diet, the avoidance of coffee, tea, and tobacco, as habitual luxuries, and attention to the bowels and the various secretions.

In the regularly intermittent form of the complaint, sulphate of quinine will prove effectual.

CHOLERA MORBUS, OR VOMITING AND PURGING.

Frequent and violent discharges of bilious matter, both upwards and downwards, with painful gripings, constitute the disease called cholera morbus.

In warm climates it is met with at all seasons of the year, and its occurrences are very frequent; but in temperate and cold climates, it is apt to be most prevalent in the autumn, when there is excessive heat, or there are sudden transitions from heat to cold; and the violence of the disease has usually been observed to be greater in proportion to the intenseness of heat. These circumstances naturally induce us to presume that cholera morbus is the effect of a warm atmosphere producing some change in the state of the bile; which change may consist either in the matter of the bile being rendered more acrid, or its being secreted in a preternatural quantity. In some instances the disease has been observed to proceed from obstructed perspiration, and likewise from food which has passed readily into the acetous fermentation, from unripe fruit, and acrid ingesta; but these causes probably would not give rise to it without the predisposition acquired by preceding great heat, succeeded by sudden transitions to cold, particularly in the evenings.

That the functions of the liver are greatly deranged in cholera morbus is very certain; but that the symptoms are caused wholly by the action of bile upon the mucous surfaces, is now, I believe, acknowledged to be an erroneous opinion. When it is considered that there is a cold stage antecedent to that of action and excitement, and that the vomiting and purging occasionally exist for some hours before the bile appears in the matter ejected, it must be evident that there is a highly excited state of the mucous

surfaces, wholly independent of the biliary secretion. The causes of cholera morbus, as well as the symptoms and the appearances after death, evince clearly that the disordered action affects both the intestinal mucous surfaces and the liver.

The disease usually comes on with nausea, soreness, pain, distention, and flatulency in the stomach, and acute griping pains in the bowels, succeeded after a time by a severe and frequent vomiting and purging of bilious matter, heat, thirst, a hurried respiration, and a frequent but weak and fluttering pulse.

When the disease is not violent, these symptoms, after continuing for a day or two, cease gradually, leaving the patient in a debilitated and exhausted state; but where the disease proceeds with much violence, there arises great depression of strength, with cold clammy sweats, considerable anxiety, a hurried and short respiration, cramps in the legs, coldness of the extremities, and hiccough, with a sinking and irregularity of the pulse, which quickly terminate in death; an event that not unfrequently happens within the space of twenty-four hours.

Our opinion must ever be unfavorable, when the evacuations upwards and downwards are accompanied by great prostration of strength, much distention of the abdomen, intermitting pulse, cold clammy sweats, a short hurried respiration, constant hiccough, spasms of the extremities, or convulsions; but a gradual diminution of the symptoms, especially vomiting, succeeded by sleep, or a gentle moisture on the skin, may be regarded in a favorable light.

From the very irritable state of the stomach on the first attack of the disease, it is almost impossible for any kind of medicine to be retained on it, and every thing is thrown up again almost as soon as swallowed. To abate this irritation and evacuate the redundant or acrid bile, it will be necessary, during this stage of the disorder, to make the patient drink plentifully of diluent drinks; tepid water alone, or flavored with peppermint, is as good as any.

In addition to these means, flannel cloths wrung out of hot water, and sprinkled with chloroform liniment, should

be applied to the stomach, taking care to renew them often. Warmth should likewise be applied to the extremities by means of bottles filled with hot water.

As soon as the stomach is sufficiently cleansed by the diluents, we should endeavor to allay or put a stop to the irritation, by administering opium in sufficiently large doses, but, at the same time, in as small a bulk as possible. It may be given in the quantity of a grain or a grain and a half with four or five grains of calomel, in the form of a pill, and be repeated every two hours, as long as the urgency of the case may require; if the pill is rejected, half a grain of morphine may be given in a little mint water, and this may be repeated as frequently as the former. In some instances, where the spasms have been so violent as quickly to induce an alarming state of debility, I have known the vomiting stopped, and permanent relief obtained, by draughts of very hot water.

After the administration of opium in the manner advised, it will be proper to immerse the patient as soon as possible in a warm bath, as this will be a likely means of checking the inordinate secretion of bile by restoring the circulation to the surface of the body, and of course relieving the orgasm of the chylopoetic viscera.

Opium, when given by the mouth, even in the smallest possible bulk, is frequently rejected by vomiting in cholera morbus; but, if given in an enema, will often in a very short space of time completely remove all the urgent symptoms, and transfer the patient from a state of torture to one of ease. Clysters of this nature, containing about a drachm of tinctura opii in each, ought therefore to be injected from time to time as long as the irritation at the stomach continues.

A cataplasm of opium and camphor applied to the region of the stomach, will sometimes revert its retrograde motions. In several cases where there prevailed great pain and irritation at the stomach, and where the patient could retain nothing on it, I have experienced the best effects from the external application of opium to the epigastric region, in the form of an embrocation. If the case proves

obstinate, paper may be saturated with chloroform liniment and applied over the stomach, and let remain until it blisters.

As soon as a sedative effect is produced on the stomach and intestines, and the violence of the attack has somewhat subsided, a mild laxative will assist the calomel in carrying off any diseased secretions.

Although we may have been so fortunate as to procure a remission of the symptoms, still, as the spasms have a great tendency in this disease to recur after the operation of the opium is over, it will be by all means advisable to continue its use for several days in such a manner as to keep up a constant effect.

In ordinary cases, where the evacuations are moderate, astringents would be improper, as they might aggravate the complaint by retaining the vitiated bile in the intestines, which ought to be discharged as long as the morbid secretion from the liver continues.

On recovery, the patient should pay particular attention to his diet, carefully abstaining from all things which might promote a return of the disease, and using only such as are light and nutritive, and which do not readily become acescent. He is likewise to pay a minute attention at the same time to the functions of the skin by flannel or other warm clothing, while the night air and sudden alterations of temperature are to be cautiously guarded against.

There are some people who are subject to periodical attacks of cholera, returning by intervals of a few weeks, producing for two or three days sickness and vomiting, increased heat of the skin and quickness of the pulse, white tongue, and thirst. Sometimes, however, the bowels are torpid. Heaviness of the eyes and great disposition to drowsiness are commonly the precursors to the attack; and if a dose of blue mass pills, joined with some gentle purgative, be then given, it will either considerably lessen its violence, or altogether prevent it.

Exercise, particularly on horseback, tonics, and the saline or sulphur waters, are well calculated to afford relief and prevent recurrences of the complaint in all such cases.

EPIDEMIC CHOLERA—SPASMODIC CHOLERA—ASIATIC CHOLERA—MALIGNANT CHOLERA—CHOLERA ASPHYXIA.

We will take the liberty of copying very extensively from Wood upon this subject. His description is plain and accurate, and his treatment simple and reasonable; it will not do harm, which cannot be said of the heroic measures recommended by some authors and pursued by many practitioners. With regard to the march of cholera, Wood says:

No barriers were sufficient to obstruct its progress. It crossed mountains, deserts, and oceans. Opposing winds did not check it. All classes of persons, male and female, young and old, the robust and the feeble, were exposed to its assault; and even those whom it had once visited were not always subsequently exempt; yet, as a general rule, it selected its victims preferably from among those already pressed down by the various miseries of life, and left the rich and prosperous to their sunshine and their fears. It was exceedingly capricious in the choice of its localities, not unfrequently leaving towns and districts in its line of march untouched, and deviating apparently from its course to seize upon others, in no important respect differently circumstanced. The period of its duration in any one spot was generally from one to two or three months, though this was much influenced by the season, being shorter for the most part when winter was near. When it prevailed in the same place more than once, it usually affected fewer persons, and was of a milder character in the second attack than in the first.

Course, Symptoms, etc.—The first approach of the epidemic influence in places about to become the seat of cholera was usually felt in the more or less general prevalence of moderate disorders of the stomach and bowels, which preceded for a short time the appearance of the disease, and continued in various degrees to affect a large portion of the population after it had become established. Sometimes there was only a slight derangement of digestion, or a simple diarrhœa, or mild dysentery; but very frequently the premonitory affec-

tion took on a more decided character, and, without amounting absolutely to cholera, approached it more or less nearly, and from this circumstance received the name of *cholerine*, adopted from the French writers.

Cholerine, in fact, often constituted the first stage of cholera, and in other cases was undoubtedly produced by the same cause, operating either more mildly or upon less susceptible subjects. It was marked by a furred tongue, irregular appetite, thirst, impaired digestion, uneasiness in the stomach and bowels, with a feeling of weight or distention, colicky pains, hiccough, diarrhœa sometimes disappearing and again recurring, nausea, sometimes vomiting, a feeling of general weakness and languor, a disposition to perspire, occasional neuralgic pains, and cramps in the extremities. In some instances, it was attended with febrile symptoms. The alvine discharges were sometimes bilious, sometimes of a dirty-white color and turbid, very much resembling oatmeal gruel. Occasionally the force of the cause seemed to expend itself upon the nervous system, and the patient was affected with severe neuralgic pains and distressing spasms, amounting sometimes to convulsions, with little or no evacuation from the stomach or bowels. The affection often subsided spontaneously, or yielded readily to proper treatment; but was very apt, upon exposure to any exciting cause, and even if neglected, without such cause, to be aggravated into cholera.

When the epidemic influence had attained an intensity adequate to the production of the full-formed disease, a few cases were first observed, usually among the lowest orders of the community. These were soon followed by others; and the numbers gradually increased until the pestilence reached its acme, when it speedily subsided, and ultimately disappeared, leaving behind it for a short time that same tendency to bowel complaints which had heralded its approach.

The attack often occurred after some imprudence in diet or exposure, but often, also, without any obvious exciting cause, and, according to some writers, most frequently in the night. It occasionally came on with loss of appetite, pain

in the back and abdomen, vertigo, noise in the ears, disordered vision, feebleness of the pulse, paleness of the face, copious sweats, a feeling of general weakness, and sometimes rigors. In the midst of these or similar symptoms, in most cases after a longer or shorter duration of diarrhœa or cholerine, but sometimes without any premonition whatever, the patient was seized with vomiting and purging, which were frequently repeated, and attended with severe pain in the abdomen, neuralgic pains in different parts of the body, and cramps of the voluntary muscles, especially those of the lower extremities. The first evacuations, in cases not originating in diarrhœa or cholerine, consisted of the ordinary contents of the stomach and bowels; but the dejections which followed were of a whitish color, thin, and watery, resembling rennet-whey, thin gruel, or rice water, and, when allowed to stand, separated into a colorless fluid, and a white, flocculent, insoluble matter, which subsided. In mild cases, or after the subsidence of the severer symptoms, they were sometimes tinged with bile, and a little blood was occasionally discharged. In some instances, they are described as having been brown, or of a deep chocolate color. The matter vomited was generally similar to the stools, but was sometimes white and glairy, as if consisting of mucus, and had an acid reäction. The evacuations were usually forcibly ejected, but without apparent straining, or much voluntary effort, and were often very copious.

The cramps usually began in the extremities, affecting especially the calves of the legs, but subsequently extended to the muscles of the trunk and abdomen. They were excruciatingly painful, and almost incessant, the muscles gathering into hard board-like knots, one contracting as another relaxed, and often distorting the fingers and toes in various directions, according to the particular muscle or muscles affected.

At the same time, the pulse sank rapidly; the extremities became cold; the features shrank; the patient was restless, and complained of intense thirst; the whole surface was bathed with sweat; the urine was scanty, and the skin began to assume a bluish, leaden, or violet color, which

extended more or less over the body, but was peculiarly striking in the face, hands, and feet. If the complaint was not arrested, the evacuations became still more copious and watery; the thirst insatiable, with a burning heat at the epigastrium; the pulse frequent, feeble, and sometimes scarcely perceptible; the breath cool; the tongue cool and pale, though still moist; the skin unusually cold, shrunken, and inelastic, so that when pinched into folds it could not resume its former state; the hands and feet shrivelled and wrinkled, as if long soaked in water, and of a dark, purplish or livid color, especially at the nails, which were sometimes almost black; the eyes deeply sunk in their sockets, and surrounded with a livid circle; the conjunctiva dry, and of a dirty whiteness; the nose and lips blue; the secretion of urine and tears suppressed; the respiration short, hurried, and oppressed, and every symptom indicative of extreme prostration. The patient was often exceedingly restless, and called incessantly for cold water or ice, and for fresh air. With all these changes, the external sensibility often remained acute, so that mustard plasters and other irritants produced severe pain; and, though cold to the touch, the patient frequently complained of a distressing heat over the whole surface. The intellect was generally sound, but more or less obtuse; and in all his moral relations the patient evinced an extraordinary apathy, being insensible alike to his own danger and future prospects and to the feelings of those connected with him.

The case was now on the borders of complete *collapse*. But a step farther, and the pulse became quite imperceptible; a feeble oscillatory movement only of the heart was discoverable upon auscultation; the blood stagnated in the capillaries; a wound of the surface yielded no blood, and little or none followed the opening of a vein; the features and whole body were so shrunken that the patient could scarcely be recognized by his friends; the bluish or purplish color often pervaded the whole surface; the voice was feeble, or quite extinct; the breath almost as cold as the external air; the respiration either hurried and feeble, or very slow and scarcely perceptible; the countenance calm, or quite

inexpressive, and the whole aspect of the patient that of utter helplessness. The reduction of temperature was such that the thermometer, with its bulb placed under the tongue, sank often to 90°, and sometimes as low as 80°, or even 77° F. The body had the appearance of death, except the eyes, which sometimes retained an expression of intelligence, and seemed as if they were looking out of a corpse. But even these were often half closed, glazed, and inanimate. In some instances, considerable muscular strength remained, and the patient suddenly rose up from bed with an expiring effort, and fell lifeless. The evacuations sometimes continued till the close, and were at last involuntary. Sometimes, however, they ceased entirely for a considerable time before death. The same difference was observable in relation to the cramps, which, in some cases, did not end even with life, the muscles remaining stiff and contracted in the dead body. Intelligence was sometimes retained till within a few moments of the close. In other cases, a period of stupor preceded death. The fatal issue sometimes occurred in four or five hours from the commencement of the attack, though more frequently life was protracted for one, two, or three days.

The complaint was susceptible of a favorable change, either spontaneously or by the aid of treatment, at any stage of its progress, even in that of collapse. If it was arrested early, the patient sometimes entered into a speedy convalescence, without any subsequent embarrassing symptoms, though not unfrequently diarrhœa and other evidences of gastro-intestinal irritation continued for a longer or shorter period. But if collapse had begun before the turn of the disorder, the patient had still great dangers to encounter, and the progress of recovery, when it took place, was often very tedious, and liable to frequent interruptions. One of the most favorable symptoms in any stage of cholera was the appearance of bile in the evacuations. In the cases of collapse, after the system had begun to reäct, a gradual restoration of the suspended functions was observed; the pulse returned, the skin became warm, the pallor or blueness of face yielded to a red flush, the secre-

tion of urine and bile recommenced, the vomiting diminished; but the oscillation extended frequently into a febrile excitement; severe headache was experienced; the abdominal pains, thirst, loathing of food, and diarrhœa continued; and convalescence, even in favorable cases, did not set fairly in until after several days of doubt and discomfort.

Sometimes a relapse followed the temporary excitement, and the patient sank with all his former symptoms. Much more frequently, however, the febrile state continued, generally assuming a low form, with most of the characters of idiopathic nervous or typhoid fever, and unequivocal evidences of gastric or intestinal inflammation, and either ending in death or in a very slow recovery. In some cases the fever assumed the remittent type, and ultimately became intermittent. Various eruptive affections, resembling those of scarlatina, rubeola, erysipelas, etc., occasionally diversified the stage of reäction. Pneumonia, bronchitis, and pleurisy also not unfrequently occurred, but so masked by the low state of the system, and the continued gastro-intestinal irritation, as often to escape the notice of the practitioner, unless carefully upon his guard. But the most dangerous affection in this stage of cholera was perhaps that of the brain, characterized by severe headache, drowsiness, low delirium, stupor, coma, subsultus tendinum, and sometimes by convulsions or paralysis. In its severe forms it was almost always fatal. The convalescence from these various secondary disorders was often protracted for months, and sometimes even for a year or more.

The course of the symptoms in cholera was not always uniform, nor exactly as above described. Sometimes the spasms were comparatively trifling or altogether absent, sometimes they constituted the chief feature of the case, to the exclusion of the ordinary evacuations. In some instances the complaint was ushered in by universal and violent convulsions. Cases were frequently observed in which fatal collapse supervened without vomiting, and others are on record in which there was neither vomiting nor diarrhœa; though, in such instances, the bowels, upon examination after death, were found loaded with the same

whitish liquid of which the discharges consisted. In some rare instances, vomiting occurred with little or no diarrhœa. Though in general there was an interval of some hours, and sometimes of a day or more, between the attack and the occurrence of the collapse, so as to allow time for the intervention of efficacious treatment, yet instances were not unfrequent in which the patient passed almost immediately into that state, and died apparently under the first blow. The bluish aspect of the surface, so characteristic of cholera, was not present in all cases, not even in all those which terminated fatally. Instead of the sinking pulse, so common even in the onset of the disease, the circulation was sometimes little affected for a considerable time; and in some cases, febrile symptoms, with a strong and excited pulse, showed themselves in the first stage. The intellect, usually correct, though obtuse, was in some cases clouded almost from the commencement; and instances occurred in which determination of blood to the head, with drowsiness, stupor, and numbness of the extremities, were the prominent symptoms.

From an examination of the symptoms above detailed, it will be perceived that a fully developed case of cholera, running through a regular course, often exhibited four distinct stages, the observance of which was important in a practical point of view. The *first* was the forming stage, consisting of a simple diarrhœa, or of more or less of those derangements described under the head of cholerine. The *second* was that in which the symptoms of cholera were decided, but the system had not yet sunk into complete prostration, and the circulation was distinctly observable, both in the larger vessels and capillaries. The *third* was the stage of collapse, already sufficiently described. The *fourth* was that of reäction, in which the characteristic symptoms of cholera had given way to local inflammations or irritations, and to general fever. All these stages did not by any means occur in all cases. The disease was often arrested in the first or second, or proved fatal in the third, without ever reaching the fourth; and sometimes the second

or even third stage came on without the known existence of those ordinarily preceding it.

The *predisposing causes* were very numerous. Whatever was calculated to diminish the vital energies, or to reduce the vital actions below the standard of health, may be ranked among these causes. Not only were debilitated individuals in greater danger when laboring under the disease; they were also much more liable to its attack. Previous disease, old age, intemperance, vicious indulgences of all kinds calculated to impair the health, deficient alimentation, an exclusive vegetable diet, confined air, especially in low and damp places, the effluvia of crowded residences, continued grief, fear, anxiety, and other depressing emotions, all these predisposed to cholera.

Nor were the *exciting causes* less numerous. Indeed, the two sets of causes often acted interchangeably; those which in some cases excited the disease producing a predisposition to it in others, and vice versâ. Whatever could make a sudden and powerful impression on the system, and whatever could irritate the stomach, was capable of converting a tendency to cholera into its reality. One of the most common exciting causes was a sudden exposure to cold when the body was warm and perspiring. Hence, in part, the injurious effects of the night air and of damp places. Sudden and strong emotions often brought on an attack. Indigestible food, such as unripe fruit and crude vegetables; excessive eating, even of wholesome food; unwholesome drinks, including impure water, cider, poor wines, and imperfectly fermented liquors of all kinds; very cold drinks and ices taken too freely, especially when the body was heated; purgative medicines, particularly those of a drastic character; these, and many other causes operating in a similar manner, were capable of exciting the disease in persons previously exposed to the specific influence.

From a combination of these causes it is that the ravages of cholera have been experienced especially by the poorest and most wretched of the population in every country; by the intemperate, the debauched, the ill-fed and ill-clothed,

the badly-lodged, the over-worked, the tenants of prisons and alms-houses, the inhabitants of crowded and filthy suburbs, or of miasmatic districts, soldiers fatigued by long marches, sailors shut up in the holds of ships, and garrisons crowded in damp and badly provided camps or fortresses. In India the natives, who live chiefly on vegetable food, suffered much more than the Europeans. In Havana, the proportion of deaths to the population was, among the colored people in general, more than twice as great; and among the free African negroes, who are probably the worst provided, about four times as great as among the whites. In cities, it was almost always the lowest, dampest, most crowded, and most filthy sections that suffered first and most. In general, the well-provided classes of society suffered little in any country, though there were almost everywhere occasional exceptions to this rule. The ravages in different countries or sections of the globe bore, in general, an inverse proportion to their well-being. Thus, Asia suffered more than Europe, and Europe more than North America.

The time requisite for the production of cholera, after exposure to the epidemic cause, is indefinite, but often very short. Instances are on record, in which persons, arriving in perfect health in an affected neighborhood, have been attacked within two or three days, and even within a single day from the time of their arrival.

By many the epidemic cholera is believed to differ from ordinary cholera only in its violence. There is undoubtedly considerable resemblance between the two affections; but I nevertheless believe them to be distinct. In cholera morbus the evacuations are generally bilious, in epidemic cholera they are rarely so. This difference has been ascribed to the greater severity of the latter complaint; and it is stated, in support of this view, that bile often appears in the discharges of epidemic cholera, when it begins to moderate. But the distinctive sero-albuminous character of the dejections in this affection is observed even in very mild cases, which yield readily to treatment, and which are

certainly less violent than the higher grades of cholera morbus. Were the two affections identical, there ought to be a point, in their respective gradations of severity, in which they should exactly coincide. Though I have seen much of cholera morbus, both in public and private practice, I have not met with a case exhibiting exactly the rice-water evacuations of the epidemic disease. There is often great and sometimes fatal prostration in the former affection; but the blue skin, the shrivelled extremities, the universal shrinking away of the flesh, and the peculiar mental apathy, are generally if not always wanting; and the neuralgic and spasmodic symptoms, if present, are so in a much less degree. Ths differences in the seasons at which they occur, the persons they attack, the situations they respectively affect, their cause, course, and termination, are other reasons for considering them as essentially distinct affections.

Prognosis.—Treated in the forming stage, while yet in the state of diarrhœa or cholerine, the disease could almost always be arrested. Even when completely formed, if not advanced to the stage of collapse, it terminated favorably, under appropriate management, in the vast majority of cases. But in the collapsed state, with the fluttering or absent pulse, the cold and leaden surface, the suspended capillary circulation, the sunken and inexpressive features, and complete mental apathy, the patient was already in the grasp of death, and medicine could be of little avail. Very few rose out of this condition, when completely formed; and the danger was in proportion to the degree in which it was approached. From the rapidity of the disease, and the destitute state of many of those most exposed to it, the patient was very often reduced to this condition of collapse before medical aid could be obtained. Hence the great mortality of this fearful epidemic. The published reports of cholera generally have reference to the disease as witnessed in hospitals, or other public institutions, where the worst cases were crowded together, and often in the last stage. The inmates of these institutions were, moreover, very frequently of the classes least able to resist the

disease; such, namely, as were already debilitated by age, disease, want, excessive fatigue, or intemperance. Among these, cholera has always made terrible havoc.

In forming an estimate of the probable result, in any particular case, all these circumstances were to be considered. In the early stages, before the symptoms of collapse had come on, in a young or middle-aged, previously healthy, and robust individual, and especially if the case occurred in the decline or towards the close of the epidemic, a favorable termination might be reasonably expected. If, during the collapse, the pulse began to rise, the skin to become warm, and the secretions of bile and urine to return, there was hope for the patient; though, in giving an opinion, it was necessary to bear in mind the great dangers of the stage of reäction. When the attack was violent, and hastening into collapse, or this condition had already occurred, and when the seizure took place at the commencement of the epidemic, in an individual more than fifty years old, or previously much debilitated from any cause whatever, the most serious consequences were to be apprehended. Dryness of the cornea, ecchymosis of the conjunctiva, and a perfect stasis of the blood in the capillaries, as indicated by the want of any change of color in the gums or inner surface of the lips upon pressure with the finger, were certain signs of approaching death.

Treatment.—The plans of treatment which have been employed in epidemic cholera are almost as numerous as the combinations of which remedies are susceptible; and, judging from the reports upon a great scale, there seems to have been little difference in the results; for the proportion of deaths has generally varied from one-half to one-third, no matter what was the locality, or what the means of cure resorted to. This apparent uniformity has no doubt arisen in part from the circumstances, that, of the cases reported, a very large proportion was utterly beyond the reach of remedies, and that, in any particular place, the favorable and unfavorable results of the different modes of treatment pretty nearly counterbalanced each other. When, however, a discriminating view is taken of the whole

ground, and the published results of individual practitioners or individual institutions, in connection with the treatment employed, are compared, we still find insuperable difficulties in coming to a just conclusion as to the most effective plan; great success being often claimed for the most different and even opposite remedies, by their respective advocates. In deciding, therefore, for himself, the physician is necessarily thrown off of the ground of general experience, upon that of principle and his own individual observation. I shall first give a sketch of the plan of treatment suggested by a judgment formed upon this basis, and afterwards a detail of various other plans, recommended by their apparent merits, or the testimony in their favor.

In the absence of any certain pathology of the disease, the efforts of the practitioner should be directed to the correction or removal of obvious disturbances of the functions, and thus to put the system as nearly as possible into its normal condition. The indications of treatment, in the first and second stages of the disease, deducible from the obvious phenomena, are, to arrest the evacuations from the stomach and bowels; to relieve irritation of the gastro-intestinal mucous membrane; to restore the suspended secretions, especially that of the liver; to equalize the circulation; to relieve the nervous disturbance; and to support, when necessary, the general strength. Of these the most important is to arrest the alvine evacuations; for it is by their continuance and increase that the fatal condition of collapse is generally induced. But the measures best calculated to answer this indication are such as will meet, to a certain extent, most of the others also; as the evacuations, if not the result of the irritation, are probably promoted by the sanguineous congestion which it induces; and the restoration of the suspended secretions, and the equalization of the circulation, must tend to diminish this congestion.

Among the remedies best calculated to meet the above indications are opium and calomel, in small and frequently repeated doses, combined, when the discharges are copious, with acetate of lead, and, in addition, if this should prove insufficient, with kino, catechu, or the extract of rhatany.

Large doses of opium are considered, and probably are, injurious, by obtunding the nervous system below the point of necessary impressibility, and thus inducing torpor and even coma, and favoring congestions of the brain and other great internal organs. In small doses, on the contrary, it proves highly useful by checking exhalation into the bowels, determining to the surface, relieving pain and allaying irritation, and sustaining a moderate, general, diffusive excitement. Minute and frequently repeated doses of calomel have the effect of stimulating the hepatic secretion, without irritating the stomach. It is indeed highly probable that they have a tendency directly to allay gastric irritation; and, if the general mercurial influence is induced, it may prove useful not only by changing the existing morbid action, but also by obviating in some degree the danger of inflammation in the fourth or last stage. The mercurial pill may often be advantageously substituted for calomel, in equivalent doses. Acetate of lead acts by the combination of astringency with a directly sedative influence upon the mucous membrane; kino, catechu, and extract of rhatany, by their astringency alone. The mutual reäction of these substances, though resulting in the formation of new compounds, does not by any means necessarily imply a therapeutical incompatibility. In relation to the combination and exact dose of the above remedies, the practitioner must be guided by the degree of severity and the peculiar circumstances of each particular case. In the mildest cases, opium and calomel may be employed alone; in those of a higher grade, the acetate of lead should be added; and in the most obstinate, all should be given simultaneously. The dose should be such as to admit of repetition every half hour or hour, during the height of the disease; after which the interval may be gradually lengthened. From one-twelfth to one-half of a grain of opium, from one-sixth of a grain to one grain of calomel, from one-third of a grain to two grains of acetate of lead, and from two to five grains of kino or extract of rhatany, are suitable quantities; and they are best given in the pilular form.

During the administration of the above remedies, the

patient may be allowed to swallow frequently very small quantities of cold carbonic acid water, which tends at the same time to relieve the burning thirst, and allay the vomiting. If this cannot be had, small doses of the effervescing draught may be substituted. A little very cold water every now and then, or small pieces of ice, will be found very grateful to the patient. Whatever liquids are administered should be cold, as heat increases the thirst, and already intolerable burning of the stomach. Lime-water and milk are sometimes useful in allaying the gastric irritation; and some of the aromatic waters may be employed for the same purpose. In cases requiring stimulation, the aromatic spirit of ammonia will often admirably answer both indications. At the same time, a sinapism of pure mustard should be applied over the epigastrium; and, when opiates given by the mouth are rejected, enemata of thirty drops of laudanum, with mucilage or thin starch, should be substituted.

To equalize the circulation and nervous excitement, efforts should be made to bring about action upon the surface of the body. For this purpose, dry heat, and moist heat by means of the warm bath or vapor bath, have been recommended. These may sometimes be advantageous in the earlier stages; but, at a more advanced period of the disease, when they would seem to be yet more strongly indicated, experience has not pronounced in their favor. Though the surface may be cold, the patient has not unfrequently an opposite feeling, and suffers greatly from hot applications. These, moreover, are apt to increase the perspiration, already, in many instances, exceedingly abundant, and thus to aid the alvine evacuations in the exhaustion of the serous portion of the blood, and consequently to hasten the collapse. Hot pediluvia, rendered stimulating with mustard, cayenne pepper, or common salt, may be used in all cases in which the extremities merely are cold. The best mode of effecting a centrifugal excitement is by moderate frictions over the surface, either by the hand alone, or with flannel, coarse towels, or a flesh-brush, or in connection with rubefacients. Care must be taken to avoid injury to the skin

by the violence of the friction. This remedy often affords great relief to the cramps. Frictions over the whole surface of the body with mercurial ointment, mixed with half its weight of camphor and one-quarter of its weight of cayenne pepper, urged to salivation, were employed with the happiest results by Dr. Lee, of New York. (American Journal of Medical Sciences, x. 544.)

Peculiar circumstances may require additional remedies. In those rare cases in which the pulse is full and strong, especially if connected with convulsive symptoms, blood should be taken from the arm. Leeching to the epigastrium is indicated in the earlier stages, when there is tenderness with burning pain in the stomach. Prostration must be obviated by the diffusible stimulants, especially in intemperate persons, though little good can be expected from these remedies in the state of collapse. Tincture of camphor, aromatic spirit of ammonia, and the ethereal preparations, are among the best. Sound port wine or brandy, diluted with cold water, and impregnated with mint or other aromatic, may also be used, though with caution. The camphorated tincture of opium is admirably adapted to mild cases of the disease, or to its earliest stage.

The above remedies must of course be graduated to the severity of the case; and, in the forming stage, while the disease is yet in the state of diarrhœa or cholerine, it may not be necessary to resort to any other remedy than an opiate, with or without calomel or the blue-mass, according as the hepatic secretion is or is not deficient. It is, however, of the utmost importance to arrest the disease in this stage, and the simple means necessary for this purpose become highly valuable remedies. When the stools retain the natural color, a teaspoonful of the camphorated tincture of opium three or four times a day, or from five to ten drops of laudanum, with a few drops of tincture of camphor, repeated as often, will very frequently be sufficient, along with a proper regimen, to check the preliminary diarrhœa, and thus ward off an attack of the cholera. Should the stools be white, or very light-colored, the mercurial should be conjoined with the opiate in alterative doses, and the

addition of a small proportion of ipecacuanha to each dose, insufficient to nauseate, will be found advantageous. Should the stomach be loaded with undigested food during the forming stage, the treatment may very properly be commenced with a gentle emetic of ipecacuanha. Should costiveness follow the use of the means requisite for checking the disease, it should be corrected by the mildest possible measures; and rhubarb is perhaps the best laxative for the purpose.

In the stage of collapse, the same indications are presented as in the previous stages, with two additional; namely, to check the excessive sweats, and to supply the loss of watery fluid and salts which has been sustained by the blood. There would seem to be even a stronger call for active stimulation; but experience has shown that this measure should be employed with some reserve. In the existing state of the circulating fluid it can be of little avail, and, when carried too far, it has the effect of still further aggravating the danger, by increasing the already excessive sweats, and exhausting the little remaining excitability of the system. The stimulants, however, already mentioned, may be used in small and frequently repeated doses, and continued, if found productive of no ill effects. The efforts to restrain the evacuations from the stomach and bowels, if these continue, should not be abandoned; and, though external heat has been found productive of little good, attempts should still be made to excite the surface by frictions and rubefacients. Sinapisms may be applied to the abdomen and extremities, and cayenne pepper and brandy, oil of turpentine, tincture of camphor, liniment of ammonia, etc., over the surface of the body. To close the cutaneous exhalant orifices, astringent solutions may be employed, such as a saturated solution of alum in brandy; and, for the same purpose, as well as indirectly to excite the skin, frictions with ice or iced water have been strongly recommended, and are said to be often very grateful to the patient. To repair, as far as possible, the loss of water and salts by the blood, the patient should be allowed to drink frequently of carbonic acid water with bicarbonate of soda in solution,

weak animal broths, with salt, iced water, iced brandy and water, gum-water, barley-water, etc.; and injections of salt water with laudanum may be occasionally thrown up the bowels.

When reäction has begun, the stimulants should be moderated or withdrawn, and attention confined chiefly to the correction of the quality of the blood, by the continued use of suitable drinks, and to the obviating of any local irritations which may appear.

When *reäction* is established, the treatment must be made to conform to the variable morbid conditions presented, and must be guided by the general principles applicable to other affections. One fact, however, must be borne in mind—that the inflammations which are apt to occur, cannot, in consequence of the previous exhaustion, be treated with the same activity of depletion as under ordinary circumstances. Blood must be cautiously abstracted, and cupping or leeching is in general preferable to the lancet. Reliance must be placed chiefly upon fomentations, blisters, the mercurial impression, and a properly regulated regimen. If a typhoid state of disease appear, it may be necessary to have recourse to tonics and stimulants, as sulphate of quinia, serpentaria, carbonate of ammonia, wine-whey, oil of turpentine, etc., as employed in the ordinary typhoid fever.

Attention to the diet is very important. In the preliminary diarrhœa, while the appetite continues in a greater or less degree, the food should be of the least irritating and most digestible kind. Stale bread, crackers, boiled rice, milk, cream, light broths, and boiled meats of easy digestion, (see *Dyspepsia*,) may be employed. When the disease is established, the diet should consist of mucilaginous and farinaceous liquids, or very weak chicken or mutton water. Milk, in very small quantities, with lime water, sometimes proves useful both as food and medicine. During convalescence, the utmost caution should be observed to avoid indigestible, flatulent, or irritating substances. The farinaceous preparations, and the lighter kinds of animal food, should be preferred. The dietetic rules given in dyspepsia and chronic gastritis are applicable here.

Much may be done by proper *prophylactic measures* to avoid the disease, or render it milder. The diet should be of such a character as to preserve the digestive organs and the general system in the soundest possible state, so that they may be neither over-stimulated nor depressed. It should consist of a mixture of vegetable and animal food, avoiding indigestible, flatulent, acid, and irritating substances, but admitting the more digestible fruits, when not forbidden by an already debilitated or irritated condition of stomach. They are useful by obviating costiveness, and the consequent necessity for the use of cathartic medicines. All those drinks should be shunned which have been mentioned as exciting causes of the disease. Habits of temperance both in eating and drinking are all-important; but for an individual accustomed to the use of stimulating drinks or food, there might be some danger in a sudden change. A moderate elevation of the vital functions is preferable to their depression; and hence the use of gentle stimulants, such as ginger, mustard, black and cayenne pepper, in moderation, may prove serviceable. An equable state of mind should be preserved as far as possible; and excessive fatigue, sensual indulgences, exposure to sudden changes of temperature, and especially to the damp night air, should be avoided.

In relation to the various plans of treatment not included in the above statement, a very general sketch must suffice. Bleeding in all stages of the disease, even in that of collapse, has been the remedy chiefly depended upon by some practitioners. Others have placed great reliance upon emetics of ipecacuanha, mustard, or warm brine; and even purgatives have found their advocates. In the East Indies, and subsequently in some parts of the United States, calomel in large doses, with or without opium, was a favorite remedy; and the quantities administered with impunity in certain cases would seem scarcely credible, were they not well authenticated. Frequent draughts of hot water were highly lauded, as constituting the most effectual treatment, by one practitioner; while another spoke with equal confidence of the almost exclusive use of cold drinks and cold

water, or ice, applied externally. Some relied upon opium, brandy, and other stimulants; the school of Broussais, on the contrary, upon cool and demulcent drinks, leeches to the epigastrium, and the external use of fomentations and rubefacients. Great success has been claimed for a treatment in which the prominent measure was the application of irritants over the spinal column; ammonia, oil of turpentine, and a heated flat-iron, being employed for the purpose. The doctrine of Stevens, that the salts of the blood are essential agents of its arterialization, and the well-ascertained loss of these salts by the evacuations which take place in cholera, led to the use of the non-purgative salts, such as bicarbonate of soda, chloride of sodium, chlorate of potassa, etc., as the main remedial measure. From the same idea of restoring to the blood the constituents lost during the disease, originated the practice of injecting into the veins during the collapse large quantities of warm water, holding common salt and carbonate of soda in solution, in the proportion in which these salts are found in the serum of the blood. The happiest effects seemed for a time to result from this remedy; the pulse returning, the surface assuming its natural color and fulness, and the patient reviving into the appearance of convalescence; but the evacuations returned, and collapse generally ensued, followed by speedy death. Nevertheless, the remedy is worthy of attention, as it affords some prospect of benefit in cases otherwise almost hopeless; and instances have occurred in which, by the simultaneous use of internal remedies calculated to restrain evacuations, a return of collapse has been prevented, and the patient restored to health. Besides the above plans of management, particular articles of the Materia Medica acquired a more or less diffusive credit with the profession or the public. Among these may be mentioned tincture of camphor, charcoal, sulphate of quinia in very large doses, and galvanism. But, as before observed, experience has not pronounced so favorably in relation to any of these remedial means, as to obviate the necessity of a recourse to general principles; and the author has already given his views as to the course

of treatment which these principles appear to him to suggest.—*Wood.*

We have nothing to add to the above admirable description of this terrible disease, and but little that is entirely satisfactory with regard to its treatment. We have carefully collected all reliable information upon this subject from all available sources, whether regular or irregular, and have had ample opportunity of studying it at the bedside, having met it in each of its visitations to this country; seen it in all its grades, from the slightest indisposition to that appalling form in which DEATH appeared without precursors; when a strong man, while in social converse after dinner with fellow-boarders, became at first sensible of vague uneasiness, then of a distressing sinking, and, sending promptly for medical aid, was found blue and pulseless, without having gone through the formalities of vomiting, purging, and cramps, and so gave up the ghost without apparent reason—without manifestation of the secondary agencies by which the KING OF TERRORS usually removes his victims. It was thus, perhaps, that the "angel of the Lord" smote the hosts which Sennacherib led up to destroy God's chosen people, for, when the Israelites arose in the morning, "they found they were all dead men." But, besides seeing the disease, the author has twice had the opportunity of studying it in his own person, and after all can only say that it is "a visitation of the Lord," and pray that God would stay "the messenger of his wrath."

Yet something can often be done, "something, too, for the benefit of the patient," and we will give the best that we have on hand by way of advice to the reader upon this fearful subject. When cholera visits your town or country you should try to be absent, and if there get away with all your loved ones as soon as possible: it is not cowardice to flee: it is prudence to get out of the track of the tornado, or retreat before an overwhelming flood; but if your duty to others makes it necessary for you to stay, be cheerful, and trust in God; avoid bustle, excitement, fatigue, improper indulgence, great change of habits, or any thing else which would have a tendency to interrupt the

equilibrium of quiet health, and disturb or weaken the vital powers by which alone the system can successfully resist morbid influences and keep off disease. Therefore, make no great change in your diet or mode of life, but eat, and sleep, and take such exercise as you have been in the habit of; and, if possible, be cheerful, and banish fear: fear alone is sufficient in many cases to produce all the common symptoms of cholera. A very striking case in proof of this came to the knowledge of the author a few years ago. A gentleman, and his wife and children, who had been on a visit to some relatives, were crossing the wire-bridge in their family carriage at the time that the recently-introduced cedar cross-pieces gave way under the pressure of a very heavily laden wagon, precipitating the wagon, team, and driver into the watery depths below, and from which only the driver was rescued, and this family only escaping by a few feet of solid flooring. The shock received by the lady was such, that in a few minutes an attack simulating cholera supervened, with all its characteristics of a sense of sinking, quickly followed by vomiting, purging, cramps, and great prostration; and yet this lady had been in good health, was not of an unusually nervous temperament, and at the moment of the catastrophe was enjoying maternal delight from listening to the prattle of her little ones. No cholera was then in the city, nor in the United States, but this factitious case was sufficient to cause a detention in the city of several days, before the lady could be removed to her home, some twenty miles distant.

It is, therefore, of the highest importance when cholera, or any other fatal epidemic, is prevailing, to preserve a quiet and hopeful state of mind, and give no place to fear, for "there is luck for the brave."

But if the disease comes, and you feel the premonitory symptoms, do not become excited, but lie down and take some gentle quieting medicine—a little brandy and laudanum, or two or three teaspoonfuls of paregoric or Bateman's drops; don't take *cholera medicines* so called: they are nearly all too strongly stimulating, and tend to increase nervous disturbance. But if the symptoms increase, and

there be a sense of oppression about the region of the stomach, with some vomiting or desire to vomit, take a mustard emetic—half a teaspoonful of ground mustard in a glass of water—which, followed by copious draughts of tepid water, will soon effectually wash out the stomach, and clear it of any offending matter which happens to be present, and, at the same time, tend to promote an equilibrium in the circulation. Now take one or two of the pills of opium and calomel recommended above; have mustard applied to the epigastrium, and to the wrists and ankles; as soon as the mustard begins to burn unpleasantly, remove the plasters to a fresh surface, and thus, by shifting them, keep up a gentle stimulation without producing that degree of excitement which might lead to nervous disturbance.

But if, notwithstanding the use of these means, the disease progresses, and violent cramp, or distressing vomiting, or wasting discharges from the bowels come, still do not become alarmed, so as to lose your prudence and swallow killing doses of calomel or opium, or any other drug; yet a decided impression may now be attempted to be made by external means: chloroform liniment, with half the quantity of laudanum, may be applied to the spine and to the stomach and bowels by rubbing, or, which is a more efficient way, by saturating cloths or paper, and applying to the surface.

This will rarely fail to arrest the disease for the present; but after an hour or two, symptoms of restlessness commonly begin to appear: the patient will change his position often, and moan as from pain; and yet will reply that he is better, if interrogated. The abdomen, if now examined, will be found to be enlarged and hard, and hotter than natural; the fluids are being concentrated in the internal vessels, and soon the capillary exhalants will pour out a deluge of hot rice-water discharges; the patient will call urgently for water, which will be rejected, and cramps and general prostration leading to collapse will usually speedily follow. But if this stage be anticipated, it may almost always be prevented, or be removed if it has already come, by the use of very simple means. The surface is now cold

and the pulse faltering, and hence heat and stimulants are at once suggested to the mind as being called for; but this is a mistake—one, too, which often leads to fatal results; for you will find that, though the surface feels cold to another, it feels hot to the patient, and any artificial heat will greatly annoy and depress him; then there is absolute heat internally, as may be known by observing the temperature of the discharges, these being often so hot as to smoke when exposed to the air. What does this state of things indicate should be done? Clearly, that an effort should be made to reduce the internal heat. But draughts of cold water will not do it, for they reach no farther than the stomach, being instantly rejected, and the heat is in the bowels; the cold wet sheet to the abdomen may and sometimes does succeed in soliciting the heat to the surface and absorbing it there, but this measure frequently fails, and only serves to determine the fluids still more to the internal parts. Little reliance can now be placed upon revulsion to the surface, as the sympathies between different parts of the system are feeble, or entirely suspended: the electric wires are broken, and association interrupted. Whatever is done to advantage must therefore be by applications made directly to the part where the impression is wanted to be made; and, happily, we possess the means of doing this in the present instance. Cold water may be thrown into the bowels by means of a large syringe, and operate with the same directness in cooling the internal surface as it will the external when applied to it. I will give a case in point illustrative of the benefit of this measure, and of my general manner of procedure in managing cholera.

The patient was a little daughter of Mr. Stewart, of the lower wharf, in this city. The cholera had, for several days, been raging in a very malignant form in the vicinity; several had died suddenly the day of this attack: it was a violent one, and boded the worst consequences. The late Dr. B. McNairy attended the case with me, and after several hours' industrious effort, by means of small doses of calomel and opium, frequently repeated, and friction, mus-

tard, and chloroform liniment to the surface, etc., we succeeded in obtaining a truce—the vomiting and purging and cramps subsided, and our little patient sank into a quiet slumber; but the general features of the case indicated to the practiced eye of Dr. McNairy that this was only a lull in the storm—a suspension of active hostilities, in order to a reärrangement of the forces for a last and irresistible charge—and he so expressed himself to the friends, in order to prevent the indulgence of false hopes. By the by, this suspension of active evidence of the disease is not always to be claimed as the result of means that have been used, as it often takes place, as has been before observed, when nothing has been done.

Seeing that nothing more could at present be done to advantage in this case, we left to attend to other calls, but returned in about an hour. The child had slept quietly during that time, but now showed signs of restlessness; and, upon examination, I found the extremities cold and nearly pulseless; the surface pale, the features pinched, and the abdomen distended and hard; I called for ice-water; and, while it was being prepared, a spasmodic action of the bowels took place, which sent the rice-water discharge to some distance on the floor beyond the pallet on which the child lay, and a steam arose from it as from boiling water. I immediately threw up a pint of ice-water, which, in less than a minute, came back hot; another and another syringe-full was thrown up, until the intervals of the discharge became longer, and the injected water came away cool. I then gave an injection composed of about two ounces of flour-gruel and twenty drops of laudanum, and made pressure upon the hips to prevent its being expelled; in a little time expulsive efforts ceased, and the child again fell into a quiet slumber, from which she awoke some hours after, much improved. The victory was now won; nothing more was afterwards done, and a speedy recovery took place. My good friend, the Doctor, did not return for some hours after—being engaged with those whom he supposed offered a better chance of being benefited by medical skill—and was much surprised to find

that the patient was not dead, but presenting unmistakable symptoms of amendment, and remarked to the father that "this was an especial act of Providence." And so it was; but the cold water injections were the visible means by which he worked.

I wish the treatment illustrated by the above case carefully noted, as, though cholera may never come again—which God grant!—it is equally applicable to like conditions occasionally met with in congestive fever, and in other diseases in which profound depression is attended with wasting discharges from the bowels.

Since the above was written the author has had the opportunity of testing the above plan of treatment during two visitations of cholera, and in his hands, and in those of other physicians who adopted it, it proved uniformly successful if adopted before fatal collapse had supervened.

As most of the functional derangements of the liver have been sufficiently noticed in connection with diseases already treated on, it is unnecessary to refer to them again; but there is one whose importance requires a more extended notice, viz.,

JAUNDICE.

This is an affection in which the skin, eyes, and urine are of a yellow or yellowish color, from the presence of bilious matter. The color in jaundice is in all cases a mere symptom, occasioned by the presence of the coloring matter of bile in the blood. This may arise from either of the following causes:

Excess of Production.—This probably happens in some instances of bilious fever, cholera, and diarrhœa, in which, along with a yellow color of the skin, eyes, and even urine, there is a bilious vomiting or purging. The same cause that produces the disease may occasion an increased production of the yellow principle, which, though escaping by the usual emunctory, is not thrown off in that way with a rapidity corresponding to the exigencies of the system, and therefore finds other outlets. The same excess may sometimes occur

as an original affection; and then we shall have an attack of idiopathic jaundice, with bilious stools.

Absorption.—This is believed by most to be an ordinary, and, by many, the exclusive source of jaundice. An obstruction takes place in some portion of the biliary passages, which prevents the excretion of the bile. An accumulation of this fluid necessarily takes place in the gall-bladder or biliary passages behind the seat of obstruction; and even the biliary tubes of the liver sometimes become greatly distended. It is supposed that the bile is now either absorbed and conveyed into the circulation, or regurgitates directly into the venous radicles by which it was thrown out, and thus becomes excessive in the blood. Such obstructions do undoubtedly sometimes exist in jaundice, and serve as the cause of it. But whether the bile reënters the circulation after having been once thrown out is not so certain. A much more probable supposition is, that in cases of obstruction and consequent accumulation, the pressure made by the accumulated fluid upon the secreting vessels impedes this process, and thus prevents the due elimination of the yellow coloring matter from the blood. While, therefore, I am willing to admit that absorption may contribute to the production of jaundice in cases of obstruction, I am also inclined to the opinion that, even in such cases, deficiency of secretion is a more effective agent.

Deficiency of Elimination.—Should the view taken of the existence of the yellow coloring matter of bile in the blood in health be correct, it follows that when the secretory action of the liver is either suspended, or diminished in a degree greater than that in which the coloring principle is produced, its accumulation in the circulation and its elimination by other emunctories are necessary consequences. Such, I believe, is most commonly the origin of jaundice.

Symptoms, Course, etc.—In most cases, the appearance of the characteristic phenomena of jaundice is preceded by symptoms indicative of functional disorder of the liver, and derangement of the digestive organs generally. Such are diminution or loss of appetite, sometimes nausea and vomit-

ing, a vague and indescribable uneasiness in the epigastric and hypochondriac regions, a sense of sinking in the abdomen, as if the bowels wanted support, a tendency to constipation, furred tongue, double or otherwise disordered vision, general disquietude, great and apparently causeless depression of spirits, and a disposition to gloomy views of all subjects. These are not all present in all cases; and in some instances most of them are wanting. If, after their appearance, the stools be examined, they will be found lighter than natural, perhaps at first of a light yellow hue, as in healthy infants, but afterwards whitish or grayish, like potters' clay.

At length the yellowness of the surface makes its appearance. In some instances, this is the first observable symptom. The color usually shows itself first in the eyes and face, afterwards upon the neck and upper part of the chest, and ultimately extends over the whole body, being most intense in those parts where the skin is thinnest and the perspiration most apt to appear, as upon the front of the trunk and on the insides of the extremities. At first, the color is usually a light yellow, sometimes a lemon yellow, which gradually deepens, and at length, if the disease continues, is apt to assume an intense golden or deep orange hue, and this often covers the whole surface. Occasionally the yellowness is modified by a greenish tinge, and in some comparatively rare cases the color is so deep as to approach to blackness—a result which is probably owing in general to a depraved condition of the blood, such as occurs in scurvy. The affection thus characterized is sometimes called *green* or *black jaundice*. In ordinary cases, the yellow hue is often modified by the natural complexion of the patient, being lighter in the fair and deeper in the brown. The discoloration of the skin is occasionally attended with a very troublesome itching.

The urine, which is at first little changed, after a time becomes yellowish or orange-colored, but with varying degrees of intensity, being sometimes little deeper in its tint than in health, but generally much darker, like a rather strong infusion of saffron, and occasionally deep-brown or

blackish. The darker hues are usually owing to a greater amount of the coloring matter; for the urine, if diluted, becomes bright yellow. The urine of jaundice may be distinguished from that of nephritic affections by imparting a bright yellow stain to white linen.

All the other secretions are occasionally more or less tinged with bile, especially the perspiration, which often stains yellow a towel rubbed upon the skin. The milk, however, is rarely affected, and the same may be said of the mucous secretion. The coating of fur on the tongue is often yellowish, and the patient frequently has a bitter taste. Though the conjunctiva is almost always deeply stained, the vision may remain unaffected. Sometimes, however, the coloring matter appears to be deposited in the humors of the eye, and then all objects are of a yellow hue.

After the appearance of the yellowness of skin and urine, I have often observed that the preliminary symptoms diminish, though they still continue in a greater or less degree. The patient is still in general affected with epigastric uneasiness, more or less disorder of digestion, depression of spirits, general languor and indisposition to exertion, and other signs of nervous disorder. The bowels are usually costive, though sometimes regular, and in general readily moved by purgative medicine. The stools are in the great majority of cases whitish, gray, or clay-colored, from the absence of bile. Though the stomach is frequently disordered, and even nausea and vomiting sometimes occur, yet this is by no means invariably the case, the appetite being in some instances quite natural, and the digestion unimpaired. The tongue is sometimes furred, sometimes nearly or quite healthy in appearance. The skin is usually harsh and dry. The pulse varies much, being either quite natural, irregular, or excited, and even febrile.

The course of the disease is exceedingly various; sometimes rapid in its attack, and as quickly disappearing; it not unfrequently runs on for weeks and months, and, in some obstinate cases, may even persevere for years. In the vast majority of cases, it either gets well spontaneously, or yields sooner or later to appropriate treatment. Indeed,

fatal cases of jaundice are exceedingly rare, unless when it is complicated with incurable organic disease of the liver or adjacent viscera. The first sign of a favorable change is usually the reäppearance of the healthy color of the stools, indicating a restoration of the secretion or excretion of bile. Simultaneously with this change, there is usually a great improvement in the symptoms of digestive and nervous disorder, indicated by a return of appetite, a disappearance of the epigastric uneasiness, and restored cheerfulness. This amelioration is often experienced before the discoloration of surface has been materially diminished. Gradually, however, the yellowness of skin, eyes, and urine disappears; in general, receding last from the parts first attacked. The urine at this period frequently deposits a delicate reddish sediment.

Causes.—According to the views of jaundice already given, it may be produced by any cause which materially diminishes, or suspends altogether, the secretory function of the liver, whether by producing a torpor or a sort of paralysis of the organ, or by overwhelming its powers through the means of active congestion. The agents capable of giving rise to these effects have been sufficiently treated of under other heads. (*See* FUNCTIONAL DISEASES OF THE LIVER, and HEPATITIS.) Among the most frequent may be mentioned continued heat, miasmata, the depressing emotions, any sudden and violent passion, hysterical excitement, errors of diet, and gastric or duodenal affections operating through sympathy. The disease is said also to have sometimes prevailed epidemically.

There is a variety of jaundice to which very young infants are liable. It comes on usually a few days after birth, and disappears in a short time, without any other observable disorder of system, unless perhaps a more than ordinary degree of drowsiness. It gives way almost always to gentle laxatives.

Treatment.—In simple jaundice the most obvious indication is to promote the hepatic secretion; and, in the great majority of cases, this is all that is required. As soon as it is discovered, by an inspection of the alvine evacuations,

that the bile has fairly begun to flow, and that its flow can be sustained, a speedy cure may in general be calculated on with much certainty.

In order to meet the indication properly, it should be ascertained, if practicable, whether the liver is in a state of active congestion or irritation, or whether it is torpid. If there be pain or a sense of fulness in the side, with tenderness on pressure, the former may be inferred; full doses of some brisk purgative should be given, and emollient poultices, or cloths saturated in tepid water, applied to the region of the liver.

But much more frequently there are no evidences of inordinate excitement of the liver, and the want of secretion must be ascribed to mere torpor, or a state of passive congestion. In this case, the treatment must be directed to the stimulation of the hepatic function. For this purpose a purgative dose of calomel should be given, to be followed in due time by a dose of castor oil. Instead of calomel alone, a combination of this with other active cathartics may be employed, as in the compound cathartic pill. Sometimes the more energetic action of an infusion of senna may be found advisable. After this, if the strength of the patient remain unimpaired, and the constipation with clay-colored stools continue, the cathartic may be repeated at intervals of two, three, or four days, until the flow of bile is established; but, generally speaking, the alterative use of mercury alternated with laxatives will be preferable, as equally efficient and less exhausting to the patient. From half a grain to three grains of calomel, or one or two blue-pills, may be given every night or every other night, and followed in the morning by two drachms or half an ounce of epsom salts or cream of tartar; the object being, in every case, to produce a slight stimulation of the liver, and a gentle action on the bowels, without any observable effect upon the gums, or any exhaustion of the strength. The disease will often yield to this simple plan. Should no evidence of a return of biliary secretion be observed in the course of a week or two, or should the symptoms at the commencement be urgent, it will be proper

to resort to other measures. An emetic will often prove serviceable by compressing the liver, and, through its sympathies with the stomach, rousing it into action. Tartar emetic is preferable for this purpose. This remedy, however, is disagreeable, and may generally be dispensed with. Small doses of various emetic medicines also prove serviceable by stimulating the liver to secretion.

There are other remedies supposed to have the cholagogue property, which may be used either as adjuvants of the mercurials, or as substitutes. The most efficient of these is nitro-muriatic acid, which may be used externally during the alterative mercurial course, and internally after it has been for some time suspended. The bark of the wild cherry, the dandelion, and soapwort have some reputation of the same kind, and are occasionally used. Aloes is thought by many to stimulate the liver directly, and is certainly a useful remedy in jaundice. Electricity may also be employed to rouse the torpid viscus.

The narcotics are often highly beneficial by relieving nervous disorder, and producing sleep. Of these, hyoscyamus and conium should be preferred to opium, which has a tendency to restrain the secretion of bile. They may, in general, be used quite freely; but should not be employed when the head is materially affected. They may be used, among other purposes, for the alleviation of the disagreeable itching, which may also be allayed by gentle frictions with rye meal. The anodyne alterant (*see* DYSPEPSIA) given in tablespoonful doses three times a day, and blue-mass at night, have often succeeded after many other means had failed: a blister over the liver will aid other means in arousing the liver when torpid. When the disease is associated with organic affections of the liver or its appendages, the remedies suited to these affections must be resorted to. When jaundice exists along with bilious stools, indicating a probable excessive production of the coloring matter of bile in the circulation, the treatment should consist in the use of saline cathartics, and a vegetable diet.

In obstinate cases of jaundice, and for completing the cure of those which have partially yielded to remedies, the

greatest advantage may be expected from a visit to the watering-places, especially to those in which the waters combine chalybeate and purgative properties.

The diet must be accommodated to the circumstances of each case. When excitement exists, it should be confined to vegetable food, or to this with milk; but in most cases animal food is not only admissible but required. In all cases indigestible food should be scrupulously avoided. The regimen suited to dyspepsia is also, as a general rule, the best in jaundice not complicated with inflammation.—(*See* DYSPEPSIA.)

INFANTILE JAUNDICE.

Very young infants not unfrequently have a form of *jaundice* which, though usually not a serious disease, often causes much maternal anxiety. I think the best remedy, and the only one which I use, is small doses of calomel. No medicine acts so mildly and safely in many of the diseases of *infancy* as *calomel.* It should be given in doses of half a grain to a grain, and repeated every three or four hours until relief is obtained.

CHAPTER II.

FUNCTIONAL DERANGEMENTS CONNECTED WITH RESPIRATION.

CATARRH—COMMON COLD.

My readers are all familiar with the symptoms characterizing cold. The most prominent are, lassitude, sense of chilliness, a feeling of tightness across the forehead, headache, pains in the back and limbs, a hot watery secretion from the eyes and nose, hoarseness, sore-throat, cough, etc. The chief causes are, sudden changes of temperature, exposure to a damp cool atmosphere after fatigue or having been confined to a close room, cold and dampness to the feet, sitting in a current of air, etc.

Everybody knows how to treat a cold—at least, they suppose they do; and yet no disease is oftener mistreated; and as this frequently leads to the development of very serious forms of disease, it becomes important that correct rules should be understood for its management. When we recollect that catarrh is ushered in with the same symptoms which attend the forming stage of most fevers, and often presents in its course all the distinctive phenomena attending a paroxysm of fever, it follows as a reasonable conclusion that the condition of the system is also similar, which my readers have already been frequently informed consists essentially in nervous disturbance and capillary inaction, which leads to capillary congestion, followed by arterial reäction. I would therefore refer the reader to the article on Fever for full information as to the condition of the system and the best means for removing it.

But, usually, catarrh requires no treatment, the efforts of nature being fully able to bring about a perfect restoration of health in a few days; yet many simple means may easily be brought to bear in aid of the vital powers, and thus lighten the task and insure success. A teaspoonful of Bateman's drops, or paregoric, or fever syrup, taken every two or three hours, and some mild tea, as garden sage, wild sage, balm or spicewood, drunk plentifully, a hot mustard foot-bath, and chloroform liniment to the spine and chest, will usually effectually break up a cold in a very few hours. When there is great irritation of the nose and eyes, saturating a corner of your handkerchief with chloroform liniment, and holding it to your nose while breathing, will often afford prompt relief, and will open the nostrils when the swelling of the sniderean membrane has obstructed the passage of the air. If there be much cough and little expectoration, ten grains of Dover's powder may be added to a cupful of one of the teas mentioned, and drank on going to bed.

A cold should never be suffered to continue long, as it will get up permanent morbid changes that may become very difficult of removal. Frequent bathing, or sponging with cold water, will be found of great advantage by those who easily contract colds.

INFLUENZA—EPIDEMIC CATARRH—GRIPPE.

The name influenza has been applied to an epidemic disease which usually takes on the character of catarrh. At the moment of invasion, it seizes almost simultaneously on great numbers, and before its departure sometimes involves almost the whole population. Its average duration, in each neighborhood, is about six weeks; though the cause appears to linger after all the susceptible material for its action has been exhausted; for strangers arriving in the affected region, after the disease has apparently ceased, are not unfrequently attacked. The inferior animals appear to suffer as well as man. Many instances are on record, in which horses, dogs, sheep, and even birds, have been attacked by the epidemic. Some persons are much less susceptible to

the morbid influence than others, and some appear to be altogether insusceptible. No obvious cause exists for this discrepancy. All ages, both sexes, and every variety of temperament and occupation, are equally liable to attack. It has been estimated that from one-half to three-quarters of the community are in a greater or less degree affected.

The disease exhibits, on the whole, a remarkable uniformity of character, though it has occasionally differed much in its grade of severity, in different times and places. In general it is very mild; but on some occasions, and in certain localities, it has proved extremely fatal. Thus, during the epidemic of 1580, nine thousand persons are said to have died of the disease in Rome. It is probable that other epidemic influences may occasionally combine with and modify it in certain situations. It may, for example, be readily conceived that, if it should make its appearance in a neighborhood already tainted with a typhoid influence, it might fearfully increase the mortality.

In many of the epidemics, authors have recorded unusual changes in the temperature, moisture, and weight of the atmosphere; but the same state of the weather has not been observed in different places attacked; and not unfrequently there has been nothing uncommon noticed. It appears that the disease has prevailed in all climates, at all seasons, and in every possible thermometrical, hygrometrical, and barometrical variation. It has sometimes occurred in summer, though more frequently in the colder seasons.

Symptoms.—Influenza usually appears with the ordinary symptoms of catarrh or common cold, upon the whole, in a rather aggravated form. In many instances, however, it is very light, without fever, and scarcely regarded by the patient. It usually begins with coryza or sore-throat, and the common preliminary symptoms of fever, as feelings of lassitude and weariness, pains in the limbs, chilliness, rigors, etc., which are followed first by heat of skin, headache, and excited pulse, and soon afterwards by cough, uneasiness in the chest, and other signs of pectoral disease. But the symptoms of nervous derangement are in general much more prominent than in ordinary catarrh, and there is

greater muscular debility. Disorders of sight and hearing, giddiness, pains in the back and limbs, general uneasiness, and depression of spirits, are not uncommon in this disease. The headache is often severe, sometimes affecting equally the whole head, but more frequently concentrated in the forehead, and especially in the region of the frontal sinuses. Not unfrequently the pains extend to the back of the neck, in the form of rheumatism, and to the cheeks and temples, which are very sore and painful. Disorders of stomach, such as nausea and vomiting, are more common than in ordinary catarrh. But the most distinguishing feature of the disease is the debility which attends it. As in ordinary catarrhal fever, there is generally a remission of the febrile symptoms in the morning, and an exacerbation towards night.

Epidemic catarrh has usually the same course and duration as the disease from ordinary causes. It generally terminates favorably by perspiration, copious mucous secretion from the bronchia, or increased discharge of the urine, which deposits a sediment on standing. Pustular eruptions, erysipelas, and scarlet rashes, are enumerated among the phenomena which occasionally occur at the close of the complaint. The duration of the disease varies from two or three days to one or two weeks; and a cough is frequently left after the other symptoms have disappeared. The fever probably, in most cases, goes off about the fifth day, with copious sweating or expectoration.

Epidemic catarrh is very seldom a dangerous disease. It is scarcely ever fatal, unless complicated with other diseases.

Treatment.—In relation to the treatment it is necessary to say but little. The disease must be managed in the same way essentially as common catarrh. Eupatorium or boneset has long been recommended in this disease. I have employed it in many cases exclusively, and found it useful by its sudorific, laxative, and emetic properties, when administered early in the complaint, in the form of warm infusion; and by its tonic powers when given in cold infusion, in the advanced stage. When diarrhœa occurs in the latter stages, it may be arrested by means of Dover's powder or paregoric. When the debility is considerable, it is often

necessary to support the system by tonics, aromatics, and even more powerful stimulants.

WHOOPING-COUGH, OR PERTUSSIS.

This is a contagious disease, characterized by frequent paroxysms of coughing, in which the expiration is broken into numerous short, rapid, and spasmodic movements, and the inspiration is long, and frequently sonorous. It most frequently affects young children. Medical writers usually divide it into three stages: 1, the catarrhal or forming stage; 2, the spasmodic instance, or that of progress and maturity; and, 3, the declining stage. The limits of these several stages are not always well defined, nor do they all exist in every instance of the disease. Something like them, however, is very generally observable; and the division enables the symptoms to be more conveniently grouped in description, than they could be without this or some similar arrangement.

Symptoms, Course, etc.—The disease generally begins, like a common cold, with coryza, running at the nose, red and watery eyes, sneezing, irritation of throat, a dry cough, and sometimes febrile symptoms; and it is often impossible to distinguish it, with certainty, at this period, from catarrh or common cold. The cough, however, has usually more of a paroxysmal character; and this circumstance, in connection with the fact that the disease is prevalent at the time, is sufficient to fix suspicion upon the case, and put the practitioner upon his guard. This stage continues, in most cases, for one or two weeks, before decided spasmodic symptoms appear. Sometimes, however, its duration is shorter, and sometimes longer. Instances, indeed, now and then occur, in which the characteristic symptoms of the disease appear at the outset; and it is occasionally observed, during the prevalence of whooping-cough, that catarrhal affections run a corresponding course, as if dependent upon the same cause, though destitute of the peculiar spasmodic phenomena.

But, in most cases, at the end of eight or ten days, the cough begins to change, gradually assuming the proper

character of pertussis; and the disease passes into the second stage. This, when fully formed, presents the following symptoms. At irregular intervals through the day and night, the child is seized with an irresistible disposition to cough. But the sound, instead of occupying continuously the whole time of expiration, as in ordinary complaints of the chest, is broken into a number of short coughs, which succeed each other with an almost convulsive force and rapidity; and the inspiration that immediately follows is long, difficult, and often attended with a shrill or whooping sound, which has given its common name to the complaint. This succession of spasmodic cough and shrill inspiration is repeated again and again, thus constituting a paroxysm, which lasts variously from thirty seconds to fifteen minutes, or even longer. During the paroxysm, the face is flushed, swollen, and sometimes purplish or livid, the veins of the neck and temples distended, the eyes prominent, and the countenance expressive of much distress. The child, if lying, starts up into the sitting posture, and, if standing, seizes some person or object near him for support. In violent cases, the blood sometimes escapes from the nose, mouth, or ears, or is extravasated into the tissue of the conjunctiva; and the urine and fæces are discharged involuntarily. The paroxysm usually terminates with the expectoration of transparent mucus, and not unfrequently in vomiting, which appears to relax the spasm, and thus proves serviceable in the complaint. Occasionally, however, no discharge takes place from the lungs or stomach, and the paroxysm ceases with the exhaustion of the patient. For a short time after it is over, the child appears feeble and perhaps trembling, with hurried pulse and breathing; but he soon recovers from these symptoms, and seems as if nothing had happened, resuming his play or occupations with his ordinary cheerfulness, and often showing an eager desire for food, especially after vomiting. If asleep when seized with the cough, he lies down when it is passed, and is soon asleep again.

The paroxysms increase in frequency and violence until the complaint is at its height, which is usually in three or

four weeks from the commencement of the attack, though the time may be considerably shorter or longer. The disease then appears to remain stationary for about two or three weeks, after which it begins to decline, and the third stage commences. The spells of coughing now gradually become less frequent and severe, and more catarrhal, being attended with the expectoration of opaque whitish or yellowish matter, and losing much of the spasmodic or convulsive character. At length the broken expiration and the whooping sound cease entirely, and the patient is either well, or affected with a slight ordinary cough, which in its turn ceases.

The force of the disease varies much, even in its simple form. In some instances it is so slight that it can scarcely be determined, after recovery, whether the child has had whooping-cough or not. In others again it is very severe, with frequent and violent paroxysms, which seem to threaten suffocation. By the pressure upon the brain, fatal convulsions are sometimes brought on; and death may also take place from asphyxia during the paroxysm. In protracted cases, great emaciation and debility sometimes ensue, and the patient may die of exhaustion. But these results are comparatively rare. The simple form of the disease almost always terminates favorably. It is, however, liable to complications, which are very often dangerous, and not unfrequently fatal.

Different opinions have been entertained of its contagious nature; but the great majority of writers are united in believing that it is propagated from individual to individual; and it does not appear possible to the author to resist the weight of evidence in favor of this view. It is probably most contagious at the period of its highest development.

As a general rule, the disease occurs only once in the same person. Exceptions occasionally occur to this rule, as in all other contagious diseases. It is confined to no age, sex, or condition of life. Persons advanced in life are sometimes attacked, and Dr. Watson mentions a case in which a child was born with it. For a very obvious reason, however, it is confined chiefly to early childhood. Being fre-

quently prevalent, and highly contagious, it attacks most persons early in life; and adults escape because they have once had the disease. It is said to affect infants less frequently before than after the commencement of dentition. But may not this be owing to the fact that, upon the whole, very young infants are less exposed to the cause?

Treatment.—In simple cases of whooping-cough, without violent symptoms, little treatment is requisite. In its severer forms, however, treatment is often highly useful in alleviating the symptoms, and, in complicated cases, is frequently indispensable to safety.

In the early stage, if the catarrhal symptoms are moderate, it will be sufficient to give a mild cathartic, as castor oil, magnesia, or the sulphate of magnesia, and afterwards small doses of ipecacuanha or antimonial wine, at short intervals.

When the spasmodic symptoms appear, different remedies are required. Emetic medicines are useful by relaxing the spasm, depressing general arterial excitement, and promoting expectoration. They may be aided by the frequent use of *hot pediluvia*, [foot-bath,] or the *warm bath*. When fever has disappeared, and the proper paroxysms of whooping-cough only remain, recourse may be had to the antispasmodics.

By far the best of the nervous stimulants that I have employed is *assafœtida*. It should be given in emulsion, in the dose of one or two grains to a child two years old, repeated three or four times a day, or, in severe cases, as often as every two or three hours. Though disagreeable at first, it soon ceases to be so; and it is not at all uncommon to see the little patient anxious for the repetition of his dose. *Garlic* may often be very happily employed as a substitute for assafœtida, when this may not be at hand, or may, from any cause, be forbidden. Other antispasmodics, which have had more or less reputation in the complaint, are *musk*, *castor*, *valerian*, *camphor*, *ammonia*, *oil of amber*, and *cochineal*.

Vaccination appears, in some instances, to have exercised a decided influence in modifying or arresting the disease;

and may therefore be resorted to in cases in which the child has not yet undergone this process.

In the declining stage of the disease, the same remedies may be employed as previously, in gradually diminishing quantities, as the peculiar symptoms decline. Should a troublesome cough remain, in this stage, it may be treated with the stimulant expectorants, combined with opium or hyoscyamus, as in chronic bronchitis. Debility must be counteracted by the moderate use of tonics. But what is chiefly required, is care to avoid causes of inflammatory attacks, to which the child is now very incident.

Should convulsions occur in the course of the complaint, without fever, heat of head, or other signs of dangerous cerebral disease, assafœtida should be given by injection, garlic poultices applied to the feet, frictions with garlic and brandy made along the spine, and the body immersed, if necessary, in a warm bath.

The diet should vary with the stage and the degree of excitement. It should consist, in the early stage, chiefly of vegetable substances, with or without milk; at a more advanced period, of the same materials, with milk freely, and a little of the lightest kind of meat, as the boiled breast of fowl, soft boiled egg, etc.; and, in the end, when the patient is debilitated, of the most nutritious food. Whatever is taken should be of easy digestion. Should inflammation at any time supervene, the diet should be strictly vegetable. The child should always be clothed with flannel next the skin. In the catarrhal stage, he should be confined to a uniform temperature; but, when the disease has become purely spasmodic, frequent exposure to fresh, dry air, even in winter, is not only allowable, but often highly useful. Damp should always be avoided. In protracted cases, or those with a tedious convalescence, the cure is much promoted by change of residence, as from town to the country, or from one part of a town to another; and, in the winter season, great good may be expected from removal to a warm climate.

ASTHMA.

This disease is a spasmodic affection of the lungs, which comes on by paroxysms most generally at night, and is attended by a frequent, difficult, and short respiration, together with a wheezing noise, tightness across the chest, and a cough; all of which symptoms are much increased when the patient is in a horizontal position.

Asthma rarely appears before the age of puberty, and seems to attack men more frequently than women, particularly those of a full habit, in whom it never fails, by frequent repetition, to occasion some degree of emaciation. Dyspepsia always prevails, and appears to be a very prominent feature in the predisposition. Its attacks are most frequent during the heats of summer, and in winter, when heavy fogs or sharp cold winds prevail.

When the disease is attended with an accumulation and discharge of humors from the lungs, it is called the humid asthma; but when it is unaccompanied by any expectoration, it is known by the name of the dry or spasmodic asthma.

On the evening preceding an attack of asthma, the spirits are often much affected, and the person experiences a sense of fulness about the stomach, with lassitude, drowsiness, and pain in the head. On the approach of the succeeding evening, he perceives a sense of tightness and stricture across the breast, and a feeling of straitness in the lungs, impeding respiration. The difficulty of breathing continuing to increase for some length of time, both inspiration and expiration are performed slowly, and with a wheezing noise; the speech becomes difficult and uneasy, a propensity to coughing succeeds, and the patient can no longer remain in a horizontal position, being, as it were, threatened with immediate suffocation.

These symptoms usually continue till towards the approach of morning, and then a remission commonly takes place; the breathing becomes less laborious and more full, and the person speaks and coughs with greater ease. If the cough

is attended with a free expectoration of mucus, he experiences much relief, and soon falls asleep.

When he awakes in the morning, he still feels some degree of tightness across his breast, although his breathing is probably more free and easy, and he cannot bear the least motion without rendering this more difficult and uneasy; neither can he continue in bed, unless his head and shoulders are raised to a considerable height.

Towards evening he again becomes drowsy, is much troubled with flatulency in the stomach, and perceives a return of the difficulty of breathing, which continues to increase gradually till it becomes as violent as on the night before.

After some nights passed in this way, the fits at length moderate, and suffer more considerable remissions, particularly when they are attended by a copious expectoration in the mornings, and when this continues from time to time throughout the day; and the disease going off at last, the patient enjoys his usual rest by night without further disturbance.

During the fits the pulse is not usually much affected, but in a few cases there is a frequency of it, with some degree of thirst, and other febrile symptoms. In some persons the face becomes turgid and flushed during the continuance of the fit, but more commonly it is pale and shrunk. Urine voided at the beginning of a fit is generally in considerable quantity, and with little color or odor; but after the fit is over, what is voided is in the ordinary quantity, of a high color, and sometimes deposits a sediment.

Asthma, but more particularly the spasmodic, is brought on by almost every thing which increases the action of the heart, and which stimulates and fills the vessels of the mucous membrane. Thus, it is produced by intense heat, by lightness of air, by severe exercise, by strong mental emotions, by full meals, by stimulating drinks, by exposure to cold and atmospherical influence, and by certain effluvia, as those of hay, whether new or old, of sealing-wax, and other burning substances.

Congestions of blood, noxious vapors, impure and smoky

air, cold and foggy atmosphere, sudden changes of temperature, scrofulous, rheumatic, gouty, and scorbutic acrimony; dyspepsia or irritation in some of the abdominal viscera, but particularly in the stomach; irritation of the bronchial system, suppression of long-accustomed evacuations, frequent catarrhal attacks, erratic gout, general debility, water in the chest, aneurisms, polypi, and the like, are the causes from which this formidable disease may arise in different individuals. In some instances it proceeds from a hereditary predisposition, and in others from mal-conformation of the chest.

Asthma having once taken place, its fits are apt to return periodically, and more especially when excited by certain causes, such as by a sudden change from cold to warm weather, or from a heavier to a lighter atmosphere; by severe exercise of any kind which quickens the circulation of the blood; by an increased bulk of the stomach, either from too full a meal, or from a collection of air in it; by exposures to cold, obstructing the perspiration, and thereby favoring an accumulation of blood in the lungs; by violent passions of the mind; by disagreeable odors; and by irritations of smoke, dust, and other subtle particles floating in the air.

A consequence of convulsive motions is the habit of repetition the muscles have contracted by laws peculiar to the animal economy; so asthma is believed to depend frequently upon this cause.

The proximate or immediate cause of the disease has by Dr. Cullen and most other writers been supposed to be a preternatural or spasmodic constriction of the muscular fibres of the bronchiæ, which not only prevents their being so dilated as to admit of a free and full inspiration, but also gives them a rigidity which interferes with a free and full expiration.

Asthma usually diminishes as soon as a mucous secretion begins to take place.

The sudden accession of the paroxysms, generally after the first sleep, their returning at intervals, and the sense of constriction about the diaphragm, occasioning the patient to

get into an erect posture, and to fly for relief to the cold air, will readily distinguish asthma from other diseases.

Prognosis.—Asthma is occasionally cured, and more frequently relieved; but, in the great majority of cases, after being once established, it continues with a more or less frequent recurrence of the paroxysms until the close of life. When uncomplicated, it is almost never fatal, notwithstanding its apparent violence; but it is not unfrequently associated with fatal diseases; and there is reason to believe that it sometimes produces them, and is thus the remote cause of death. A judgment, therefore, as to its results in any particular case must be founded on the character of the attendant diseases.

Treatment.—There are two prominent indications in the treatment of asthma: one to relax the spasm, the other to correct the predisposition. The former is presented in the paroxysm, the latter in the interval.

One of the most effectual means of producing relaxation is the use of *emetic substances*. These may be given so as to vomit, or merely to sustain a considerable degree of nausea. Ipecacuanha is perhaps most employed. It may be given in the full emetic dose, and afterwards, if deemed necessary, in small doses, so as to nauseate. Lobelia, too, has great reputation, and is certainly in some instances very effectual, though it fails, as every remedy is liable to do, in others. I think I have derived more advantage from it than from any other single remedy. Tartar emetic and squill have also been employed. In severe cases, when the breathing is so obstructed as to threaten immediate death, a teaspoonful of ground mustard given in a pint of warm water will afford the most speedy relief. The emetic and nauseating treatment generally is best adapted to the disease when associated with a degree of bronchial inflammation.

Antispasmodics are often very useful in the purely spasmodic cases. Sulphuric ether, assafœtida, and musk are among the most effectual, and they are often usefully associated with one of the salts of morphia. They are especially beneficial in hysterical cases. Strong coffee is also much

employed, and is often serviceable. It should be saturated, and a cupful taken every twenty or thirty minutes. As it loses its effects somewhat upon repetition, it is a good plan to abstain from its habitual use at meals.

Certain *narcotics* have been much and beneficially employed. Some caution, however, is requisite in their use. Stramonium, or Jamestown weed, is the one which enjoys the highest reputation. It is employed almost exclusively by smoking the dried leaves or stems, like tobacco. The relief which it affords is sometimes great and immediate. It is most efficient when used at the commencement of the paroxysm. The smoking of tobacco also occasionally affords great relief. Opiates are very useful in the purely spasmodic cases, without tendency to cerebral disease. The salts of morphia are perhaps preferable to the other preparations. They may often be usefully associated with the other medicines employed, as with sulphuric ether and colchicum.

Besides the three classes of medicines above mentioned, many other remedies have been used with greater or less advantage in the paroxysm. The application of electricity or electro-galvanism has occasionally arrested it. The same may be said of cold water, dashed in the quantity of a pailful over the shoulders. The simultaneous use of cold drinks and hot pediluvia has been recommended. Sinapisms or other powerful rubefacients to the chest sometimes afford relief; but there is danger that some of the more volatile substances of the class may increase by their vapors the sense of suffocation. The inhalation of the fumes of burning paper, previously impregnated with a saturated solution of nitre and dried, is asserted to be sometimes very effective. It is best that the paper should have been dipped a second time into the solution and dried. It may be either burned in the chamber or smoked by means of a pipe; but nothing has afforded in our hands such prompt relief as bathing the spine and chest with the chloroform liniment. In cases attended with spinal tenderness, cups or leeches should be applied over the tender vertebræ, and followed in due time by strong ammonia, a fly-blister, or tartar emetic

ointment. The apartment should be well aired; all articles of dress that in any degree restrain the movements of the chest should be removed; as few assistants as will answer the purposes of attendance should remain in the room, and smoke and other exhalations should be carefully avoided.

In the interval, our efforts should be directed to the removal of the morbid tendency; and, for this purpose, every discoverable deviation from health should be corrected as far as possible. It is impossible to particularize all the remedies that may be employed. The attention should be directed particularly to the state of the stomach and bowels. Dyspeptic symptoms may require antacids, carminatives, and tonics; constipation, laxatives; deranged hepatic secretion, the mercurial alteratives. In the female, the menstrual function should be kept in order. In gouty cases, moderate doses of colchicum may be found beneficial. Anemia and general debility must be counteracted by tonics and a suitable regimen. If chronic bronchial inflammation exist, it should be treated with local depletion, blistering, the stimulating and nauseating expectorants, etc. Any remains of the spasm connected with the inflammation may be advantageously treated with tincture of lobelia, associated with ipecacuanha wine or syrup, the tincture or syrup of squill, or the syrup of seneka. In some cases, the metallic tonics which prove useful in nervous affections, as chorea, epilepsy, hysteria, and neuralgia, have the effect of interrupting or postponing the paroxysms. For this purpose may be employed subnitrate of bismuth, the oxide and sulphate of zinc, ammoniated copper, nitrate of silver, and the chalybeates, which may sometimes be conjoined with small doses of opium. When the paroxysms occur at precisely regular intervals, with complete intermission, there will be some chance of interrupting them by sulphate of quinia. Strong moral or physical impressions of any kind will sometimes avert them. Dr. Lefèvre, a French physician, who published a paper on asthma, used frequently to set aside a paroxysm in his own case by having his bed heated, or heating himself before a fire.

The diet should be easy of digestion and nutritious, yet

not stimulating. Caution should be particularly observed not to overload or distend the stomach. Alcoholic drinks, as well as the habitual use of tea and coffee, should be forbidden. Advantage will sometimes accrue from the daily use of the shower-bath, or sponging the chest with cold water or salt and water; but these means should not be employed unless followed by immediate reäction. Exercise is highly useful, especially on horseback. The place of abode should be chosen in reference to the particular experience of the patient, that being preferred which is found to suit him best. As a general rule, a mild equable climate, neither very moist nor very dry, is the most favorable. Travelling is sometimes highly advantageous. In this, as in other habitual nervous affections, it may be found useful to surround the patient with entirely new circumstances, so that a new set of impressions may be made on his nervous system. A long voyage, or a protracted journey abroad, would offer some hope of a permanent cure when no organic disease existed.

INFANTILE SPASM OF THE GLOTTIS—CROWING DISEASE—INWARD FITS.

This disease, though similar to catarrhal croup in some of its symptoms, is essentially distinct in the circumstance that it is purely nervous, and independent of vascular irritation. The affection is usually characterized by a shrill sound in inspiration, somewhat like the crowing of a cock, which has given origin to the name of *crowing disease*. The sound is owing to a spasmodic contraction of the chink of the glottis; and the complaint is confined to infancy and very early childhood, occurring at any time from a few days after birth to the end of the third year, but most frequently during the period of the first dentition. Hence the name at the head of this article.

Symptoms.—The attack is sudden, and may occur at any time, though it is most frequent during sleep, from which the child awakes with a start, and in great apparent alarm. He is seized with inability to inhale the air; and the first symptoms are those of a struggle for breath, with the head

thrown back, the breast elevated, the nostrils expanded, the mouth open, and all the muscles of inspiration in almost convulsive action. The veins of the neck and head are distended; and the countenance is flushed, swollen, and purplish, or of a pale, cadaverous hue, with an expression of extreme anxiety and distress. At length, but occasionally not until symptoms of asphyxia appear, the spasm of the glottis somewhat relaxes, and the air rushes in, with a shrill, whooping sound. The child then usually begins to cry, and, after a short period of hurried breathing, returns to his previous health. Not unfrequently, along with the difficulty of inspiration, there is a spasmodic contraction of the fingers and toes; and the paroxysm is sometimes followed by general convulsions. When the attack is over, the child is free from all symptoms of disease of the throat. Occasionally only a single paroxysm occurs at first, and the disease does not return for weeks. But the interval is often much shorter; and, in bad cases, the attacks take place several times a day, increasing in duration and frequency, until they occupy a quarter or half an hour at a time, and sometimes scarcely have an appreciable intermission between them.

The complaint is usually unattended with cough, fever, bronchial disease, or any appreciable inflammation of the larynx or trachea. By the absence of these affections it may be readily distinguished from croup.

Though often a trifling disease, it is sometimes far otherwise. In some instances the child perishes with asphyxia, from the persistence of the spasm.

Causes.—The disease appears to depend upon a morbid excitability of the nervous system, directed especially to the muscles of the glottis, which contract spasmodically from slight causes, such as the sudden contact of cold air, any quick unexpected movement, or vivid mental emotion, especially fright. Hence infants are sometimes attacked with it when tossed playfully in the air. The act of swallowing occasionally brings on an attack. This morbid nervous irritability is most frequently owing to dentition; but it may also be produced by other causes which dete-

riorate the general health, such as impure and confined air, unwholesome food, worms, etc.

Treatment.—It is sometimes highly important to relax the spasm of the glottis at the commencement of the paroxysm, so as to prevent asphyxia. This may generally be accomplished by dashing cold water upon the face or shoulders, gently slapping the back, or blowing into the ear. When the spasm recurs frequently, it may often be prevented by the warm bath, nauseating medicines, and antispasmodics injected into the rectum. Should the symptoms be alarming, tobacco should be applied to the throat in the form of a snuff plaster.

The general nervous excitability in which the complaint sometimes originates, should be controlled by the nervous stimulants, which have the property of equalizing the excitement. For this purpose, assafœtida or valerian may be given internally, and garlic applied in the form of cataplasm to the feet, or with hot brandy to the spine. Tonics and the cold bath, when the latter does not induce the spasm by the alarm it produces, are also useful by giving strength to the nervous system.

Attention should always be paid to the state of the gums, which should be lanced if swollen and painful. When the dentition is peculiarly difficult and painful, blisters may be applied behind the ears, or at the nape of the neck.

The bowels should also be scrupulously attended to. If the stools are white, or otherwise disordered from deranged biliary secretion, minute doses of calomel should be given, or mercury with chalk, if there is diarrhœa. Acidity must be corrected by the usual remedies. Should a tendency to constipation exist, it must be counteracted by rhubarb, magnesia, castor oil, or other mild cathartic, so as to obtain one or two stools daily. The diet should be very carefully regulated, and all indigestible or acescent food forbidden. The mother's milk is usually the best food under the year, and cow's milk with arrowroot, ground rice, etc., and animal broths in moderation afterward. The child should be clothed warmly, and made to breathe a free and pure air.

Special care should be taken to avoid all frights, or other sudden or violent emotions.

SPASM OF THE GLOTTIS IN ADULTS.

Occasionally the glottis is spasmodically affected in adults, independently of inflammation. The same phenomena to a certain extent occur as in children. There is first difficulty with laborious effort in inspiration, then the shrill whooping sound arising from the entrance of air through the somewhat opened but still contracted passage, and occasionally a croupy cough. The spasm may be excited, and sometimes fatally, by a foreign body in the larynx or pharynx. Choking is in such cases not mechanical; but arises from involuntary contraction of the laryngeal muscles, consequent upon irritation of parts supplied with branches of the same nerves. The affection results most frequently from an unstable and excitable condition of the nervous system, and is merely one of the protean forms in which hysteria exhibits itself. Sometimes it appears to have its origin in spinal, sometimes in cerebral irritation. It is much more common in women than in men.

The treatment must be directed to the cause, and is for the most part such as is adapted to cases of hysteria. Antispasmodics, narcotics, tonics, the cold or shower-bath, a proper regulation of the intestinal and uterine functions, counter-irritation to the spine, an appropriate diet, and exercise in the open air, are the chief remedies.

APHONIA, OR SUPPRESSION OF THE VOICE.

Allusion is here made only to the affections of the voice of a nervous character, independently of inflammation. Changes of the voice of this kind are not uncommon. Sometimes it becomes acute, or of a higher key, though feeble. The voice of a man is thus rendered feminine, or puerile. Sometimes the alteration is of an opposite character, the voice becoming low, or hoarse, or croaking, so that a child or a woman will speak like a man. In many instances it is entirely suppressed. No sound is formed above that of the

breath, and speech is in whispers. The attack may be sudden or gradual, and brief or of long and indefinite duration.

Causes.—These are numerous. Among the most frequent is the irregular distribution of nervous action consequent upon general debility, as after long-continued or exhausting diseases. The affection is often nothing but a form of hysteria. Sometimes it depends upon debility of the laryngeal muscles alone; as where these have been overstrained by protracted and excessive efforts in speaking or singing. Occasionally an attack is brought on by a sudden and strong mental emotion, as of joy, anger, or fright. Quick changes from a warm to a very cold air have induced it. In some instances, it appears to depend on sympathy with intestinal irritation.

Treatment.—When the disease depends on general debility, the obvious plan of cure is to restore strength by tonics, the cold bath, nourishing food, and exercise. When a mere form of hysteria, it is to be treated like spasm of the glottis from the same cause. If the brain is in fault, our remedies must be addressed to that organ, and must vary with the nature of the affection. Aphonia arising from temporary causes often disappears spontaneously. When produced by cold, it is cured by hot teas, or warm stimulating drinks, given so as to induce perspiration. Such measures are also obviously proper in all cases where the modification of the voice depends on debility of the laryngeal muscles. Under such circumstances, we may employ gargles of alum and other astringents, whether vegetable or mineral, stimulating inhalations, electricity, external irritation by means of sinapisms, blisters, croton oil, or a seton.

As some of the following diseases consist in or are attended with inflammation, they might have been treated under the head of Particular Inflammations; but as the disturbance they cause in the respiratory function constitutes their chief feature, we have chosen to group them under this head.

CORYZA—COLD IN THE HEAD.

Symptoms.—The first sensations are usually those of dryness, fulness, and tickling, or other irritation in the nostrils, with sneezing. These are usually soon followed by a copious discharge of a thin, colorless, acrid fluid, which still further irritates the membrane, while it often inflames and even excoriates the skin about the nasal orifices, and on the upper lip. The nostrils are at this time not unfrequently either partially or wholly closed by the tumefaction of the inflamed membrane, which causes the voice to assume a nasal tone. There is often a considerable degree of dull pain or aching, with burning heat in the nasal passages; and now and then severe stinging sensations are experienced from the irritation of the acrid fluid. The eyes become red and watery, either from sympathy, or by the continuous extension of irritation along the lachrymal passages; and sometimes these passages appear to be closed, so as to occasion an overflow of the tears. A similar extension of the disease to the frontal sinuses produces pain in the forehead. The maxillary sinuses are sometimes involved, with consequent pains in the face; and hardness of hearing in a greater or less degree is not uncommon, from swelling and closure of the Eustachian tubes. Even the external parts occasionally participate in the inflammation, and the nose and cheeks are swollen and tender. The sense of smell, and in a less degree that of taste, are almost always blunted or lost.

In many instances, the constitution does not seem to sympathize with the local affection; the pulse and skin remaining in their ordinary state, and the appetite unimpaired. Very frequently, however, febrile symptoms make their appearance, especially when the inflammation is of a high grade, and affects the whole of the nasal passages. Chilliness and pains in the limbs are followed by a hot skin, excited pulse, furred tongue, loss of appetite, and severe headache. The fever sometimes shows a tendency to exacerbations and remissions.

The complaint usually attains its height in three or four days, after which the symptoms begin to subside.

Causes.—The most frequent exciting cause of coryza, is the partial application of cold, to the back of the head or neck, or to the feet; and the effect is especially apt to be produced after perspiration from heat or exertion. Hence, the complaint is most common in winter. In some instances, it is probably induced by the breathing of a warm air after previous exposure to cold, in the same manner as chilblains. Some persons are much more liable to be affected in this way by cold than others. This greater susceptibility is frequently ascribable to a want of the habit of exposure; but it is often also constitutional, and inexplicable. Individuals are occasionally met with who are liable to attacks of the complaint periodically, at a certain date, once a year, without reference to the state of the weather at the time. Others are attacked at the commencement of winter, and are scarcely entirely free from the complaint until warm weather returns. Coryza is also frequently epidemic, being a very general attendant upon the influenza. It is very common at the beginning of the measles, and sometimes accompanies other exanthemata in their earlier stages, especially small-pox and scarlet fever.

Treatment.—Most cases of this disease are so mild as not to require treatment, and scarcely to interrupt the avocations or pleasures of the patient. When there is no fever, it is usually sufficient to direct a dose of sulphate of magnesia, abstinence from animal food, and the avoidance of exposure to cold or wet. Should the patient be under the necessity of leaving his house, he should clothe himself warmly, take care especially to keep his feet dry, and protect his nostrils by a handkerchief against the cold. Should the symptoms be more severe, and fever present, the treatment, in addition to the above measures, may consist of hot pediluvia, made more stimulating by the addition of common salt or mustard, and the use of refrigerant diaphoretics, as the citrate of potassa, acetate of ammonia, nitre, and tartar emetic, variously combined to suit the circum-

stances of the case. The patient should be confined to bed, and should lie with his head raised by pillows. When there is much headache, with a full, strong pulse, and the symptoms have not yielded to the above treatment, with additional purgation by one of the neutral salts, a little blood may be taken by the lancet from the arm, or, in case of inflammation of the frontal or maxillary sinus, by leeches from the forehead or cheek, or from within the nostrils.

Various measures have been recommended to relieve the local symptoms, which are often very distressing. Breathing the chloroform liniment, as recommended in catarrh, usually affords great relief; and, if done early, will often subdue the irritation and cut off the disease at once.

When an individual is subject to the complaint in its severer forms, and especially when previous experience suggests that it is likely to be the precursor of a protracted disease of the chest, it is important to be able to set the attack aside at its very commencement. This can with great certainty be done by the use of the liniment, and taking a full dose of Dover's powder before going to bed—five or even ten grains may be taken in some sweating tea. The patient will often awake in the morning quite free from the disease.

It is very desirable to be in possession of a prophylactic against this troublesome affection. I know of none so effectual as the daily habit of washing the head and back of the neck in very cold water; or, where wet feet are the ordinary cause, to dip them in ice-cold water every morning. It is best to begin with this plan in warm weather, and persevere through the winter. The cold shower-bath is also recommended.

OZÆNA, OR CHRONIC INFLAMMATION OF THE NOSTRILS.

Chronic inflammation of the nostrils is sometimes dry, being attended with little if any increase, or even with a deficiency of the usual amount of secretion. There is a feeling of uneasiness, heat, and stiffness in the nostrils, which are often closed, on one or both sides, from the thick-

ening of the membrane, so as to impede the passage of air; and this is generally the greatest inconvenience experienced. When it affects the posterior nares, there is a frequent disposition to clear them out by sudden and forcible inspirations of air through the nostrils.

In other cases, there is a copious secretion of a whitish, somewhat opaque mucus, or of a yellowish muco-purulent matter, with little uneasiness or discomfort other than that which arises from the constant necessity of blowing the nose.

Again, the discharge is occasionally quite purulent, and of a yellowish or greenish color, or it is sanious and frequently tinged with blood; and in both cases has an odor generally more or less disagreeable, and sometimes intolerably offensive. In this form, the disease is called *ozæna*, and is one of the most obstinate and disagreeable affections. In some instances, the breath of the patient is so revoltingly offensive, as almost to isolate him from society, and to render him an object of disgust even to himself. There is reason to believe that this affection sometimes occurs without any violation of the integrity of the mucous membrane; but more frequently it is associated with ulceration, and sometimes with caries of the bones. In the latter case, pieces of bone are sometimes discharged along with the pus or sanies. Large solid flakes of excessively offensive matter are occasionally discharged along with blood. The sense of smell in these cases is almost always much impaired, if not entirely lost.

Whatever may be the form of chronic inflammation of the nostrils, it often runs on for months or years, sometimes even for many years, and, in the form of ozæna, is, in certain old cases, quite incurable.

Causes.—In many instances, the chronic disease results from a continuation or frequent repetition of the acute. It is often also original. The cause is generally obscure, but I think is nearly always connected with a scrofulous taint of the system.

Treatment.—In simple chronic inflammation, cures may very often be effected by the injection into the nostrils of

solutions of acetate of lead, sulphate of zinc, sulphate of copper, or nitrate of silver. I have usually preferred sulphate of zinc, beginning with two grains to the fluidounce of water, and rapidly increasing, as the nostrils are found to bear the impression, to ten, fifteen, or even twenty grains to the fluidounce. The injection should be repeated daily or twice a day, and continued perseveringly for months if necessary. It is important that, by a proper direction of the instrument, and position of the head, the fluid should be made to reach the seat of disease, whether this occupy the whole of the membrane, or, what is much more frequent, some comparatively small portion of it, in the nasal passages or the sinuses. Sometimes the part can be reached by a camel's hair pencil, in which case this is the best means of applying the solution, as the sound portions of the nostrils may thus be avoided, and a stronger solution may be employed. When the discharge is offensive, solutions of creosote, or of chloride of soda, potassa, or lime, will do much towards correcting the fetor, and may prove useful as alteratives to the mucous surface. Sometimes advantage will result from the mere washing out of the retained mucus, two or three times daily, by injections of warm water. When an ulcer exists and is within reach, it may be treated by the direct application of solid nitrate of silver, or by a saturated solution applied by means of a camel's hair pencil. The general treatment should be the same as directed for scrofula, which see.

LARYNGITIS, OR INFLAMMATION OF THE LARYNX.

The larynx, though most commonly involved with inflammation of other parts of the respiratory passages, is sometimes exclusively, and often chiefly affected. Inflammation of the larynx is not uncommon, and is in general very manageable; though, in a few instances, when very intense, or attended with an unusual degree of serous effusion into the sub-mucous tissue, it becomes very alarming and even fatal. Its great danger, under these circumstances, is owing to the narrowness of the passage through the chink of the glottis, which is closed by the swollen state of its walls,

aided probably by spasm of the muscles, against the admission of air; so that the patient dies of true asphyxia. There is no other portion of the respiratory passages in which an equal extent of inflammation is capable of producing the same fatal results. As in most other inflammations, the disease may be acute or chronic.

ACUTE LARYNGITIS.

When originating in the larynx, and not the result of some direct violence, this form of laryngitis usually commences with a distinct chill, or with chilliness alternating with flashes of heat, which is followed by fever, with a full, strong pulse, a hot skin, and flushed face. At the same time, some soreness of the throat is felt, the voice is hoarse, and a sense of tightness, stricture, or pressure is experienced, as if there were some mechanical impediment in the larynx. To remove this the patient coughs, but brings up nothing, or only a little clear, viscid mucus. The cough is painful, and its sound is harsh and stridulous. Great difficulty of breathing soon comes on. The inspiration is prolonged, wheezing, whistling, or otherwise sonorous, and requires a considerable effort on the part of the patient. The expiration is performed more easily and silently, as the swollen membrane of the glottis acts like a closing valve against the entrance of the air, but opens readily for its exit. The epiglottis may sometimes be seen of a bright or deep red color, erect, and much swollen, so as to be unable to descend and close the glottis during deglutition. The external parts about the larynx are also often much swollen, though not invariably so. Deglutition is difficult, partly from inflammation of the fauces, but chiefly in consequence of the swollen state of the epiglottis, which prevents it from closing accurately over the orifice of the windpipe, and thus allows the substances swallowed to enter the larynx, where they excite intense irritation, and give rise to vehement paroxysms of coughing, with the most distressing dyspnœa.

Should the case now continue to advance, all the symptoms are aggravated. The voice becomes wheezing or whispering, or is quite extinguished; the cough, of which

the sound is scarcely above the breath, is agitating, often convulsive, and very painful; inspiration is exceedingly difficult, and is accomplished only after violent efforts, with great distress and anxiety, and a feeling as of impending suffocation. The patient is in general extremely restless, sometimes starting up suddenly in bed, walking about the chamber, putting his hands to his throat, showing the greatest eagerness for fresh air, and expressing in his countenance an almost fearful anxiety, apprehension, and distress. He is unable to sleep longer than a few minutes at a time, being constantly roused by the necessity for voluntary effort to get breath. The blood now begins to exhibit signs of deficient aëration, which rapidly increase in intensity. The lips have a bluish or purplish color, the face becomes of a livid paleness, and a dark circle forms about the eyes, which are sometimes protruded and watery. The surface is cool, and the pulse frequent, irregular, threadlike, and very feeble. In the midst, however, of this exhaustion, the patient makes the most violent efforts; his shoulders rise; his whole chest heaves; his countenance assumes a staring and ghastly expression; his skin is bathed in a cold sweat; and he sinks at last into a drowsy or comatose state, often preceded by delirium, and speedily followed by death.

Many remedies are recommended by authors for this disease. Only one has been found necessary in our hands, and that is the *chloroform liniment*. In mild cases it is only necessary to bathe the throat with it, and then apply flannel around the neck—a sock fits the parts best, the heel being adjusted to the front; but, in severe cases, the sock should be saturated with the liniment, and let remain until the surface is thoroughly blistered, which will usually be accomplished in from three to ten minutes. Then dress the blister with a mush poultice, well greased. The patient should keep within doors, and drink only warm teas for a day or two. This treatment, I think, will always supersede the necessity of *tracheotomy*, or opening the windpipe, which is now the fashionable remedy in England, and strongly recommended by some American writers, and which would be a justifiable measure, if no less dangerous means would

succeed in saving the patient, for the operation does not always kill.

CYNANCHE TRACHEALIS—CROUP.

Cynanche trachealis consists of inflammation of the trachea, often of the trachea and larynx, ending, in some cases, in the exudation of false membranes upon the affected surface.

It is a disease of early life; most cases of it occur during the second year of childhood. It is often complicated with bronchitis or pneumonia.

Symptoms.—In the commencement they are those of a cold; slight fever, cough, hoarseness, drowsiness, suffusion of the eyes, and running at the nose. In a day or two the peculiar signs of croup begin to show themselves, commencing with an alteration in the character of the cough, which becomes attended with a peculiar ringing sound, rendering it "brassy;" this cough being also followed, in a few hours, by a remarkable change in the respiration. The act of inspiration becomes prolonged, and attended with a characteristic crowing or piping noise, readily recognized when once it has been heard. If now the fauces be examined, the tonsils will be found enlarged, and of a red color, but less intense than in tonsillitis; the uvula also is sometimes slightly swollen. As the disease advances, the fever increases, the breathing becomes more hurried and impeded, the cough more frequent; the pulse becomes weak and irregular, there is great thirst, and the child is very irritable and restless, and, with features expressive of alarm and distress, he grasps at his neck, or thrusts his fingers into his mouth, as if to remove the cause of his sufferings. Exacerbations always take place at night, with remissions toward the morning. Should there now be a tendency toward a restoration to health, the cough will lose its peculiar clang, and become moist, whilst the crowing inspirations will almost cease. On the other hand, when the disease is about to end fatally, the drowsiness soon becomes extreme, though the sleep is uneasy; the child starts and wakes in terror; the breathing becomes gasping and interrupted; the skin gets

cold and covered with clammy sweats; and the child often dies directly after an inspiration, or coma and convulsions ensue, and close the scene.

Sometimes this disease runs a very rapid course, though usually its duration ranges from four to ten days.

Diagnosis.—The history of the attack, the hoarseness or loss of voice, the dry, ringing cough, the croupal inspirations, and the fever, distinguish this disease from every other. It can indeed only be confounded with true laryngitis; but this latter affection occurs in adults, very rarely in children, except as associated with croup; it causes a fixed, burning pain in the larynx, increased by any examination; it does not give rise to the exudation of false membranes; and, if prolonged, it ends in suppuration or ulceration. The diagnosis between croup and laryngismus stridulus, or crowing disease, is simple; for in the latter there is an absence of fever and of the peculiar cough, while during the intermissions the patient is apparently well.

Treatment.—In no disease, perhaps, is it more necessary to be prompt and cautious. Bleeding, tartar emetic, and mercury, are the measures on which we are usually taught to rely; but I cannot help thinking that this treatment is unsound, since we find that, however early and perseveringly applied, yet the disorder proves fatal. Would it not be better, then, to try the effects of a different and perhaps milder plan? For the reasons already stated, I should not advise the abstraction of blood, nor would I recommend large doses of tartar emetic or mercury. When the disease is seen early, the continuous application of hot fomentations to the throat will do great good; but if much benefit is not quickly apparent, emetics may also be administered; while, when the heat of the body is above the normal standard, a warm bath will lessen it.

Supposing that the disease advances, notwithstanding these measures, I resort to the use of the iodide of potassium, combined with assafœtida, from which I think I have seen great benefit.

In order to prevent the formation of false membranes, it is said that mercurial inunction should be had recourse to

from the commencement of the severe symptoms, half a drachm, or even a drachm, of the unguentum hydrargyri being gently rubbed in every four or six hours. The practitioner must use his own judgment as to the employment of this agent. No harm can arise from calomel given at the onset as a purgative, in doses of two, three, or four grains. In the latter stages of the disease, it will be necessary to support the powers of life by beef-tea; and wine, or a few drops of the aromatic spirits of ammonia, or of brandy, with water, should be frequently repeated.—*Tanner.*

My method of managing croup is as follows: In the forming stage, bathing the feet and legs in hot mustard-water, rubbing the throat with chloroform liniment, and a few teaspoonfuls of Cox's hive-syrup, or of equal parts of wine of ipecac. and paregoric, will usually be sufficient. But if the disease progresses, I give emetic doses of calomel and ipecac., and, as there is in this disease a great insensibility to the influence of medicine, the dose must be large: ten grains of each are not too much. If vomiting does not take place in the course of half an hour, I repeat the ipecac., or give mustard-water if the case seems to be urgent. After the child has vomited freely, I give from two to three grains of Dover's powder, or one or two teaspoonfuls of paregoric, and apply to the throat and breast a towel wrung out of *cold water*, with the liniment freely sprinkled on the side applied to the surface, and cover it with a dry flannel, still keeping the feet immersed in the hot mustard-water, or enveloped in cloths saturated with it, and kept hot by hot rocks or bricks. After relief has been obtained by these means, a dose of castor oil with a few drops of turpentine is given, and the child suffered to remain quiet, and all noise or disturbance suppressed which might prevent it from sleeping. It will usually awake quite relieved, and nothing more is necessary to be done than to give a little hive-syrup occasionally, and keep it within doors for a few days, except in very fine weather.

CHAPTER III.

FUNCTIONAL DERANGEMENTS CONNECTED WITH THE CIRCULATORY SYSTEM.

FUNCTIONAL OR NERVOUS DISEASES OF THE HEART.

These are, on several accounts, highly deserving of the notice of the physician. They are very frequent; are in themselves often the source of much inconvenience, distress, and even danger; and occasionally terminate, when of long duration, in fatal organic affections of the heart. Besides imitating, as they often do, very closely these affections, they are apt to occasion much anxious apprehension on the part of the patient, lest he may be laboring under incurable disease. In order, therefore, to be able to give all proper consolatory assurances, and with the view also of obtaining just indications of treatment, which often differs greatly in the two orders of diseases, it is of great importance to form a correct diagnosis. This is not difficult in decided cases; but there are some in which a sure decision is almost impossible, and the greatest skill must be satisfied with probable conjecture. The best plan of diagnosis is probably, first, to determine what circumstances are incompatible with the idea of mere functional disorder, and, secondly, what are compatible only with that idea. We shall thus, at least, separate the certain from the doubtful, and it will be found in practice that only a comparatively small number of cases will be left uncertain.

In nervous or purely functional diseases, the characteristic symptoms are scarcely ever, perhaps never, constant during

a great length of time. In the organic, though there are some cases in which the signs are not always obvious, and many in which they are much more obvious at one time than another, yet in the great majority of them, as the lesion is invariably present, so also are its evidences, which may be discovered if carefully sought for. When, therefore, the peculiar signs of cardiac disorder are discoverable at all times and under all circumstances, by night and by day, in sleeping and waking, during rest and exertion, not only for days, but for weeks, months, or years together, the inference is unavoidable that they are something more than functional.

In cases attended with continued or permanent secondary affections, resulting from the strong sanguineous determination and venous congestion of cardiac disease, such as bloated features, purple lips, bleedings from the nose, apoplexy, pulmonary hemorrhage and œdema, general dropsy, etc., the probabilities are altogether in favor of the existence of organic derangement.

When the symptoms of cardiac disease are ameliorated by vigorous exercise, as not unfrequently happens, we may be very certain that the complaint is not organic. It does not follow that every case of functional derangement is directly relieved by this means. On the contrary, when such derangement accompanies anæmia, it is often greatly aggravated by bodily motion. We only infer that it must be functional whenever it is susceptible of alleviation in this way.

Moreover, when the cardiac symptoms can be traced to some particular cause, appearing when that is in action, and disappearing when it ceases to act, as, for example, when they accompany the abuse of narcotic or stimulating substances, and vanish when these are used no longer, they must be considered as strictly functional.

Cases which do not fall into one of the above categories must be judged of according to the weight of probabilities. The conditions which should incline the scale towards organic disease have been mentioned under the individual complaints belonging to that division. Those of a contrary tendency will be alluded to under the following heads.

ARTERIAL SYSTEM.

Functional disease of the heart may evince itself by alteration either in the movements or the sensations of the organ, and in either case may have the character of irritation or of depression. Deranged movement may be included under the two divisions of *palpitation*, in which the heart is under excitement or irritation, and *syncope*, in which it acts feebly or ceases to act. *Neuralgia* of the heart, or angina pectoris, includes all the cases of mere functional affection of a painful character; and this may be associated with elevation or depression of the vital power of the organ.

PALPITATION.

This term is used to signify inordinate pulsations of the heart, sensible to the patient himself, or readily perceived by the observer. It varies in degree from a scarcely perceptible movement, to one so tumultuous and violent that it visibly agitates the whole chest, and occasions great distress. The pulsations may be increased in frequency or in force, or both. They are sometimes regular, but more frequently irregular, intermittent, and fluttering; and the pulse partakes of the same qualities.

The attack often comes on under some mental or physical excitement, but often also when the patient is at rest, and not unfrequently in the night, awakening him perhaps from his first sleep. When violent, it may occasion much distress. The heart feels as if bounding upward into the throat; a sense of anxiety or oppression is experienced in the præcordial region, with hurried and difficult respiration, so that the patient is frequently unable to lie down; ringing in the ears; vertigo; faintness, and even syncope. The duration of a paroxysm is quite uncertain, sometimes not exceeding a few minutes, sometimes lasting for days without absolute intermission, though varying much in violence during that time. Most commonly, it terminates within thirty minutes or an hour, recurring afterwards quite irregularly, sometimes daily or several times a day, and sometimes not until after a long interval.

Causes.—Strictly speaking, palpitation is rather the result of disease than a disease itself; and the real morbid condi-

tion upon which it depends, leaving organic affections out of view, is either deranged innervation of the heart, or an unhealthy state of the blood, which may be too rich and abundant, constituting plethora, or too watery or otherwise depraved, as in anæmia, scurvy, etc. The true causes, therefore, are such as produce either of these conditions.

The age at which palpitation is most frequent is that which intervenes between puberty and perfect maturity. Females are more apt to be affected with it than males.

Particular acts of palpitation, in one predisposed to it, may be induced by any thing of an exciting nature, whether intellectual, emotional, or purely physical.

Treatment.—In the treatment of functional palpitation, the most important point is to remove the cause. The use of all nervous stimulants and narcotics, including tea, coffee, and tobacco, should be suspended or abandoned; injurious habits of indulgence should be overcome; the most watchful guard should be kept by the patient over his emotions, and, while the mind is moderately occupied, all over-exertion should be avoided; a due amount of sleep and of bodily exercise should be obtained; and whenever there may be reason to suspect the agency of some other disease, our efforts should be especially directed towards its removal. As the anxieties and fears of the patient tend strongly to aggravate and perpetuate the complaint, we should endeavor to cheer him by every assurance of a favorable termination which the circumstances of the case may justify.

In the paroxysms, relief will often be afforded by the nervous stimulants, as assafœtida, musk, valerian, the ammoniacal and ethereal preparations, camphor, strong tea, etc. Among the best of these are Hoffmann's anodyne, and the aromatic spirit of ammonia, which may be given separately or mixed. The preparations of opium or hyoscyamus, or one of the other narcotics, may sometimes be usefully conjoined with the antispasmodics. From one to three teaspoonfuls of paregoric will often afford relief. Aromatics, combined with antacids, are sometimes useful by expelling flatus and correcting acid, which are occasionally

the exciting causes. . When an overloaded stomach is suspected as the exciting cause, a moderate emetic dose of ipecacuanha may not be amiss. Should a gouty or rheumatic diathesis exist, and stimulants be indicated, a very good preparation is the ammoniated tincture of guaiac. These remedies should be seconded by measures calculated to invigorate the system generally, such as exercise in the open air, which should be of the passive kind in the anemic cases, the occasional or daily use of the shower-bath, frictions to the surface, and a diet of nutritious and easily-digested food.

SYNCOPE—FAINTING.

Syncope is a diminution or temporary cessation of the action of the heart, with loss of consciousness, and a suspension more or less complete of respiration. It sometimes comes on suddenly without premonition; but is much more frequently preceded by signs which indicate its approach, such as a feeling of nausea or of sinking in the epigastrium, clouded or otherwise disordered vision, mental confusion, pallid and shrinking features, and a rapidly failing pulse. In general the preliminary sensations are disagreeable, sometimes exceedingly so; but occasionally they are grateful to the patient. In complete syncope, the features are collapsed and of a ghastly paleness, the surface cool, the pulse quite absent at the wrist, respiration suspended, and consciousness entirely wanting. Sometimes involuntary discharges take place from the bowels and bladder. The heart, however, seldom quite ceases to beat. The ear applied to the chest will generally detect the first sound, greatly weakened, but not the second. This is an important sign in diagnosis, as, when observed, it indicates always some hope of saving life. After a short time, the patient again draws his breath, color gradually reäppears in the lips and cheeks, the pulse may be felt at the wrist, consciousness returns, and very soon the recovery is complete. In some instances, it is attended with feelings of much distress.

Causes.—These are such as act either directly upon the heart, or indirectly through the nervous system. Of the

first set of causes there are comparatively few, if we except the organic diseases of the heart, which not unfrequently produce syncope, and occasionally terminate in that way. Among the direct causes, however, may be ranked sudden attacks of neuralgia of the heart, translated rheumatism or gout, certain poisons which operate immediately upon the circulation, especially the antimonials, and a state of depression following excessive excitement of the organ, the sedative influence of the warm bath, etc.

The causes of syncope which act on the heart through the nervous system are very numerous. Whatever opinion we may entertain as to the inherent and independent irritability of the heart, this much is quite certain, that it is under the controlling influence of the nervous system, and often ceases to act when that influence is suspended or perverted. Hence, violent shocks on the nervous system, which paralyze it for an instant, are frequent causes of syncope. Hence the effects of sudden intelligence, whether exciting or depressing; of certain offensive or fearful sights, as a public execution, or a painful surgical operation; of sudden and excruciating pain, as sometimes in spasm of the stomach or bowels; and of violent injuries to the frame, whether from accident, or the knife of the surgeon. Much milder impressions on the nervous system often have the same effect upon the heart; such, for example, as result from certain rich and oppressive odors, the feeling of nausea connected with gastric disorder, the sensations excited in pregnancy by the movements of the fœtus, and excessive hunger, or rather want of food. The presence of indigestible matters in the stomach sometimes has a powerful effect of this kind. Under the head of causes acting through the nervous system may also be placed certain powerful poisons, as digitalis, tobacco, and hydrocyanic acid.

Deficiency or loss of blood is well known to be a frequent cause of syncope.

Diagnosis.—The only conditions from which syncope may not be readily distinguished are apnœa [suspended breathing] and death. In the former, there is the same absence of consciousness, respiration, and pulse at the wrist; but the

aspect of the body is usually sufficient to distinguish the cases. In apnœa there are signs of general venous congestion, such as purple lips, swollen features, and a more or less dingy or livid hue of the surface; while in syncope the countenance is pallid and collapsed, and the skin apparently bloodless. The cause, if known, will also frequently serve to aid in the diagnosis. If it be such as acts primarily on the lungs, it produces apnœa; if upon the heart, syncope.

Treatment.—The first thing to be done in syncope, threatened or existing, is always to place the patient in a horizontal position, with the head at least as low, if not lower than the rest of the body. By this simple measure, employed when the premonitory symptoms are first felt, an attack may very frequently be averted; and it is also one of the most effectual means of restoration after the attack; sometimes, indeed, absolutely essential to recovery. Hence the importance of distinguishing such cases from those dependent upon congestion of the brain. An individual subject to syncope should at once lie down when he feels an attack approaching. Sometimes, as in cases of excessive hemorrhage, it is necessary to maintain the horizontal position steadily for a considerable time; until, in fact, the blood-vessels are again supplied by nutrition. At the same time that this measure is employed, all pressure from tight dresses, corsets, cravats, etc., should be carefully removed from the chest, neck, and abdomen, and the patient should be surrounded with pure fresh air.

Means should also be employed to rouse the nervous system. For this purpose, spirits of hartshorn, strong vinegar, or other very pungent volatile substance, may be so applied that the vapors may enter the nostrils; but care must be taken not to carry the remedy too far, lest it produce severe inflammation of the part. The smoke of burnt feathers has been employed for the same purpose. Sprinkling cold water upon the face is also useful, by the shock which it produces on the nerves. Slapping the palms of the hands, and making a shrill sound in the ears of the patient, are vulgar remedies which are not without effect. If the patient can swallow, he may take a draught of cold

water, which seems to act upon the mucous surface in the same manner as on the skin, by exciting a sensation that leads to reäction. Diffusible stimulants should also be administered, especially the ethereal and ammoniacal preparations; and, as in palpitations, the most convenient forms are Hoffmann's anodyne or compound spirit of sulphuric ether, and aromatic spirit of ammonia. In cases of great debility, brandy may be used. Should the patient be unable to swallow, and the syncope not speedily yield to the measures above recommended, stimulants, such as oil of turpentine, brandy, and carbonate of ammonia, properly diluted, should be injected into the rectum.

Remedies must also be applied to the surface. The body should be kept warm, but not overheated; frictions should be employed with a fleshbrush or coarse flannel; and rubefacients should be applied along the spine and to the extremities, care being always taken not to permit them to remain so long, or to be used with such a degree of intensity, as to endanger much inflammation on the occurrence of reäction. A most powerful means of producing excitement, is a bundle of small switches applied briskly to the spine.

When the syncope has proceeded from large draughts of cold water taken into the stomach in hot weather, the patient, if able to swallow, should take full doses of laudanum, with ether, solution of ammonia, hot brandy toddy, or even water alone, made as hot as it can well be borne. The other remedies above mentioned may be used at the same time, and especially a sinapism over the epigastrium.

When an overloaded stomach, or some acrid or indigestible matter in the stomach, is the cause of the affection, it would be proper to administer an emetic of powdered mustard with warm water or warm chamomile tea, which may be aided if necessary by a little ipecacuanha.

ANGINA PECTORIS, OR NEURALGIA OF THE HEART.

Neuralgia of the heart and angina pectoris are considered by some as different diseases; but it is impossible to point out any important distinction between them. Though

angina has frequently been found in connection with organic disease of the heart, yet frequently no such affection has been detected upon examination after death; so that it must be considered as essentially nervous. Angina is, therefore, a painful nervous affection, and this is the very definition of neuralgia.

Symptoms.—The disease is characterized by severe pain in the left side, occurring at irregular intervals, with freedom from pain between the attacks. In the paroxysm, the pain generally shoots through the chest towards the back, and into the left shoulder, and not unfrequently extends down the arm, where it is attended with a feeling of numbness. This combined sensation is sometimes felt as far as the fingers, proceeding downward from the elbow, along the course of the ulnar nerve. Sometimes also the pain spreads to the anterior part of the chest, ascends up the left side of the neck, or descends to the left leg, and cases are mentioned in which it has even extended to the right side of the body. There is occasionally exquisite tenderness of the left mamma in the female, and pain upon pressure in different parts of the chest, both anteriorly and posteriorly, in both sexes. There is every grade of violence in the sensation, from a dull aching numbness, up to the most acute and excruciating pain. Along with the pain, there is often a sense of tightness or oppression in the chest, with dyspnœa, inability to lie down, and sometimes violent palpitations; and the patient not unfrequently has the feeling that he cannot live unless speedily relieved. Though the breathing is apparently much oppressed and difficult, yet the lungs can generally be fully expanded by a voluntary effort. The pulse is usually small, irregular, and feeble, but sometimes strong and voluminous. Occasionally the paroxysm ends in convulsions or syncope. There is often much flatulence of stomach, and the urine during the paroxysm is pale and limpid.

The paroxysm varies in length from a very few minutes to half an hour, or even an hour, and sometimes, though rarely, exceeds the last-mentioned period. The patient is sometimes free from pain, and in apparent health, during

the intervals; but more frequently he suffers with occasional uneasiness in the region of the heart, which evinces signs of some form of organic disease of that organ.

The first attack, which is in most cases comparatively mild, is usually experienced upon the occasion of some extraordinary exertion, such as ascending a height, especially in the face of a cold wind. The patient is suddenly seized with pain, and immediately stops, feeling that it is utterly impossible for him to advance, and as if he should die were he to make the effort. After a few minutes, however, the pain subsides, and he is enabled to proceed. The attack is afterwards repeated, but at a very uncertain interval—after one or more weeks, for example, or months, or a year; but the interval generally diminishes with the continuance of the complaint; so that at length the patient becomes liable to a paroxysm upon the slightest excitement, and even without any apparent exciting cause.

But there are many cases much less severe: the pain may not be less acute; but it is not so extensive, recurs quite irregularly both as to degree and time, and may disappear for a very long period, or never return. There are, indeed, fugitive pains in the heart as in other organs, depending on various causes of nervous derangement, and quite trivial in their nature, which it is necessary, if they are classified at all, to place along with neuralgia. The same may be said of that sort of uneasy feeling about the heart, extending often to the shoulder and arm, which consists rather in a sense of stricture, weight, or aching numbness, than of positive pain, and which is not uncommon in nervous and dyspeptic patients of a gouty or rheumatic constitution.

Instances of cardiac neuralgia have been observed, in which the paroxysm returned at certain fixed periods, with imperfect freedom from pain in the interval. Such cases are strictly analogous to the intermittent or periodical neuralgia, which frequently occurs in other parts of the body.

It is asserted that angina pectoris has sometimes disappeared upon the breaking out of certain eruptions upon the skin.

Like neuralgia in other situations, that of the heart may be associated with, and possibly in some measure dependent upon, general debility, nervous derangement of the system at large, and the chlorotic or anemic condition of the circulation. It is one of the forms in which hysteria shows itself, and is apparently, in some instances, connected with tenderness of the spine. It occasionally alternates with neuralgia elsewhere, especially in gouty or rheumatic individuals. It has sometimes appeared to originate in continued and deep distress of mind. There is good reason to believe that it is sometimes a result of miasmatic influence. Occasionally, it is associated with general plethora, which may possibly serve sometimes as the exciting cause. Dyspepsia and disease of the liver often occasion neuralgic sensations in the heart. The complaint is apt to come on when the stomach is overloaded with food, distended with flatus, or irritated by acid or indigestible matters.

Treatment. — The remedial measures are, first, those adapted to the paroxysm; and, secondly, those which are to be used in the interval.

1. During the paroxysm, the patient should be kept at rest; and to relieve the pain, anodyne and antispasmodic medicines should be given freely; and none are so efficacious as the preparations of opium, as laudanum, the black drop, and the salts of morphia, of some one of which a large dose should be given at once, and repeated if the first should not prove successful. Should the pulse be feeble, and the skin cool, the ammoniacal or ethereal preparations, musk, assafœtida, or camphor, should be prescribed, separately or variously combined; and, in such cases, with a gouty or rheumatic taint, ammoniated tincture of guaiac may be added. Should evidences of acid or flatus in the stomach exist, carbonate of ammonia is well calculated to meet the indications; or various mixtures of aromatics and antacids may be administered. When there is reason to suspect an overloaded stomach as the cause, vomiting should be produced by ipecacuanha, aided by warm water, infusion of chamomile, or mustard water.

Hot pediluvia, rendered more stimulating by mustard or

cayenne pepper, should be employed simultaneously with the internal remedies. The chloroform liniment, applied to the chest and along the spine, will be found to be of great advantage.

2. In the interval, the exciting cause should be carefully avoided, and the patient should therefore sedulously cultivate calmness of mind and perfect equanimity, while he avoids all vigorous muscular effort. At the same time, the general health should be carefully attended to, as the best safeguard against the attacks of the disease. Dyspepsia should be corrected with especial care, along with its concomitants, acidity, flatulence, and constipation. (*See* DYSPEPSIA.) In employing exercise in reference to the state of the general health, the passive kinds, as on horseback, or in a carriage, should be decidedly preferred to the active. Any existing morbid tendency which may have predisposed to the disease, or excited it, should receive due attention. Hence, rheumatism, anæmia, or hysteria, if present, should be treated with appropriate remedies; but when rheumatism is seated in a safe and convenient spot, caution should be observed not to remove it by repellent measures.

Sometimes advantage will accrue from a strong impression upon the nervous system by means of the metallic tonics, associated with the narcotics. Nitrate of silver, sub-carbonate of iron, sub-nitrate of bismuth, the salts of copper, or those of zinc, may be given in connection with the extract of belladonna, of stramonium, or of hyoscyamus, or of the three combined. For the periodical cases, sulphate of quinine is the appropriate remedy. The paroxysms, when apt to occur at bedtime, may sometimes be effectively anticipated by a full dose of opium.

Nor should local remedies be neglected in the intervals. Issues in the thighs have been highly recommended. Blistering, antimonial pustulation, setons, or issues may be employed on the back between the shoulders. Advantage has also accrued from a belladonna plaster upon the breast.

Finally, in very obstinate cases, not attended with serious structural disease of the heart, much good may be expected from travel, which places the nervous system under

wholly new influences, and often subverts those tenacious, morbid associations which sustain if they do not originate neuralgia.

ARTERIAL PALPITATION.

This name is given to an increased pulsation or throbbing in the arteries, which can be felt by the individual affected. It bears the same relation to the ordinary state of these vessels that palpitation of the heart does to the healthy action of that organ. It may occur in any of the larger arteries, but is most frequent in the aorta, especially in that portion of it which is opposite to the pit of the stomach. It is only in the abdominal aorta that it has attracted particular attention, or requires especial notice here.

Symptoms.—Upon the application of the hand to the epigastrium, the throbbing is distinctly felt, and so violent is it occasionally that it may even become sensible to the eye. Though not usually attended with pain, it is often very annoying to the patient, and sometimes occasions harassing fears of serious organic disease. It is in general intermittent in its character, occurring in paroxysms, which, however, are altogether irregular, both in their degree and the period of their recurrence. In some instances it remains pretty constant for a considerable length of time.

Causes.—It depends on a great variety of causes. Indeed, whatever is capable of extending an irritation to the great sympathetic nerve, and especially to the solar plexus and its ganglia, seems to be capable of producing it. The persons in whom it is most apt to occur are those of a highly nervous temperament. Hypochondriacal, hysterical, and anemic individuals are peculiarly susceptible to it.

Treatment.—The primary object must be to search out the derangement, functional or organic, in which it may have originated, and to apply remedies to this derangement. The condition of the liver, of the stomach, of the bowels, and of the abdominal contents generally, should be carefully examined, and corrected by appropriate means, if found deranged. Should evidences of inflammatory congestion or irritation exist in the spine, or should there appear good

reason for suspecting its existence in the solar plexus, cups or leeches applied to the back, followed by blisters or other revulsives, would be the proper remedies. In anemic cases, a plan must be adopted, consisting in the use of chalybeates and a nutritious animal diet. Care must be taken also to arrest all exhausting discharges. Sometimes narcotic and antispasmodic medicines become necessary to allay nervous disorder. For this purpose, hyoscyamus, conium, lactucarium, camphor, valerian, assafœtida, musk, or compound spirit of sulphuric ether, and sometimes opium, may be resorted to. The cold shower-bath will occasionally prove a useful adjuvant. If the patient is much troubled with flatulence, a fluiddrachm of one of the aromatic tinctures, as the compound spirit of lavender, or the compound tincture of cardamom, or a draught of strong infusion of ginger, will often dissipate the symptoms. The use of tobacco, coffee, and strong tea should always be abandoned, or at least suspended for a time, till it is ascertained whether they may not have been the cause. Exercise, fresh air, agreeable mental occupation, cheerfulness of spirit, and, as the most effectual method of combining these requisites, a journey to some public watering-place, especially to one of the chalybeate and saline springs, will be among the most effectual means of cure.

PLETHORA.

A morbid increase of the blood beyond the wants of the system is called plethora. It is not, however, a mere augmentation of volume in the circulating fluid that is entitled to that name. This may result from an excess of watery fluid, and is not incompatible with the state of anæmia, which is the opposite of that of plethora. There must be a morbid increase of those constituents of the blood upon which its nutritive and stimulant properties depend, and to which it owes its peculiar character; such as the red globules, fibrin, and albumen. There may or may not be an increase of bulk.

There is no precise proportion of the active principles of the blood which is alone compatible with health. Their

quantity constantly varies with the varying sources of supply and extent of consumption; and, within certain limits, no inconvenience is experienced from this irregularity. Even when derangement of function results from an excess of blood, if it be moderate, and speedily relieved, as very often happens, by an increased activity of secretion, or a diminished vigor of the process of sanguification, or blood-making, the excess scarcely deserves to be considered morbid. It is only when the derangement is threatening or very inconvenient, or continues long without relief, that the affection would come under the designation of plethora.

It is not necessary that there should be an absolute increase of the blood, in order to the existence of the disease. The quantity may remain precisely the same, and yet, if the wants of the system for the support of its various functions should diminish, the phenomena of plethora may result; for it is the loss of balance between the supply and consumption, the former being in excess, that constitutes the affection.

Symptoms.—Florid cheeks, and redness of the lips, tongue, conjunctiva, and mucous surfaces generally, wherever visible, are usually considered as evidences of plethora, and they frequently are so; but they are also occasionally wanting, when the capillaries are from any cause inactive, or the excess is not so much in the red globules as in the other active constituents of the blood. The pulse is ordinarily full, strong, and somewhat accelerated. When the affection is moderate, there is a slight feeling of heaviness, mental and bodily hebetude, and disposition to sleep; which increases, in severe cases, and is attended with a sense of fulness or tension in the head, vertigo, tinnitus aurium, or headache, and sometimes palpitations of the heart and oppressed breathing. Bleeding from the nose or rectum is not uncommon. Blood drawn from the arm is often more highly colored than in health, and affords a larger coagulum, with comparatively little serum. It seldom exhibits the buffy coat, unless the affection be complicated with inflammation. Plethora is said by writers to be frequently attended with obesity. This may occasionally be the case;

but, though the habit is often full, I have not usually found plethoric patients fat, and not unfrequently they are quite thin; the very deficiency in the nutritive function being probably one of the causes of the excess of blood. The copious secretion of adipose matter has a tendency to keep down any plethoric accumulation to which the individual may be predisposed.

Causes.—A loss of equilibrium between the supplying and expending processes is the immediate cause of plethora. Digestion and absorption are relatively more vigorous than nutrition and secretion. The former processes may be healthy, while the latter are defective; or the former may be in excess, while the latter are healthy; or both may be deranged in different directions, and thus coöperate to the same result. Whatever occasions this loss of equilibrium is a remote cause of the disease. Excessive eating, especially of animal food; stimulating condiments or drinks, which excite digestion into preternatural activity; and indolent or sedentary habits, which occasion a deficient expenditure of blood in the various vital processes, are, singly or conjointly, the most efficient agents in the production of plethora. It is especially apt to result, when long-continued active exercise is suddenly followed by a sedentary life. The invigorated appetite and digestion produced by the former continue for a while after its cessation, and throw copious supplies into the circulation; while the previous expenditure is cut short or diminished, in consequence of the want of bodily activity. Continued moderate warmth, especially following cold weather, sometimes gives a morbid vigor to the process of sanguification. Hence, the system is apt to become plethoric in spring. Certain constitutional influences have the same effect; such, for example, as pregnancy, which is often attended with plethora. Some individuals have a peculiar tendency to the over-production of blood, and become plethoric without any assignable cause; and these are of course most readily affected by ordinary causes. Whatever checks secretion may give rise to the complaint. Cold sometimes probably acts in this way. The sudden stoppage of an habitual discharge, to which the sys-

tem has accommodated itself, is an occasional cause. Hence, in part, the accidents which follow the drying up of long-continued issues, the healing of old ulcers, the cessation of habitual hemorrhage from the nostrils, rectum, or uterus, and the omission of venesection after its frequent employment at certain intervals. From what has been said it might be inferred that plethora is more common in females than males; and such is asserted to be the fact. Children are thought to be less subject to it than adults, in consequence of the vigor of their nutritive process. Perhaps the period at which it is most apt to occur is that of approaching maturity, when the body ceases to expand, and the processes concerned in sanguification have not yet fully adapted themselves to the new condition of the system.

Treatment.—In the treatment of plethora, reference must be had to its duration. If it be temporary, and not immoderate, it will be sufficient to restrict the diet to vegetable food exclusively, or to this along with milk, to administer refreshing and mucilaginous drinks, and to keep the bowels freely open by saline laxatives. Should the symptoms be in any degree alarming, threatening apoplexy, for example, or indicating dangerous pulmonary congestion, the lancet should be resorted to, and employed with a freedom corresponding to the danger. There is some hazard, however, in a too frequent resort to venesection in this complaint. The system accommodates itself at length to the repeated losses by a proportionate increase in the activity of sanguification; and if, under these circumstances, the abstraction should be inadvertently omitted, serious hemorrhages or other lesions might ensue. In cases of a protracted character, where the tendency to plethora is such that an excess is generated almost as fast as relieved by depletion, the lancet is admissible only to obviate immediate danger. The cure is to be effected here by a careful removal of all the causes; by a regulation of the diet, the avoidance of stimulants and tonics, and frequent bodily exercise, of a kind not calculated greatly to excite the heart. In relation to the food, the abstemiousness should be in proportion to the obstinacy of the case. The patient should not sleep too warmly, and mattresses

are therefore preferable to feather-beds. He should also avoid confinement in overheated apartments. The secretions should be sustained. If the skin is dry and the capillaries inactive, advantage will accrue from the occasional use of the warm bath and moderate friction to the surface. Scanty urine may be relieved by cold drinks, with the aid of saline diuretics, especially bitartrate of potassa. Constipation must be obviated by the refrigerant laxatives. But the most important remedies by far will be found in diet and exercise properly regulated.

ANÆMIA.

By anæmia is understood a morbid deficiency or poverty of the blood. It is not necessary that there should be a deficiency in the volume of the circulating fluid. On the contrary, this is often quite as great in the disease as in health, and perhaps sometimes even greater. But in such cases the nutritive constituents of the blood are in less than their regular proportion, while the watery part is in excess. Any condition of the blood would come under our notion of this disease in which, either from deficiency in its general amount, or want of due proportion in its nutritive and stimulant ingredients, the functions of the body should be deranged in a considerable degree or for a considerable length of time.

There are two forms of this disease, one suddenly and the other gradually introduced. The former may be called *acute*, the latter *chronic anæmia*. Under these names they are here considered.

ACUTE ANÆMIA.

This consists in a sudden diminution of the mass of blood, produced by copious bleeding or profuse hemorrhage. The whole volume of the blood is lessened, while its ingredients bear to each other the ordinary relation. It has its origin usually either in venesection, spontaneous hemorrhage, ruptured aneurisms, ulceration or sloughing of the larger vessels, bleeding from wounds, or flooding in child-birth. The treatment consists of means calculated to arouse the failing

or suspended actions of life, and, when immediate danger is passed, of such as tend to supply the deficient blood.

CHRONIC ANÆMIA, OR CHLOROSIS.

This is a not unfrequent attendant upon other diseases, which have the effect of impairing the processes of digestion and sanguification, or draining the system of its blood; but it also appears to have occasionally an independent existence. It therefore merits distinct consideration. One of its most ordinary forms is that usually designated by the name of *chlorosis*, or *green-sickness*. Some authors consider this as a distinct affection from true anæmia; but even these place its characteristic feature in poverty of the blood; and it would be difficult to point out a single essential phenomenon in the complaint which may not be traced to that source. The circumstance that it generally occurs in girls or young unmarried women would only prove that there are circumstances in their situation peculiarly operative in the production of the disease, and not that there is any thing peculiar in the disease itself. Nor is chlorosis confined to girls, or even to the female sex. The authors who treat of it as a distinct affection, acknowledge that it is sometimes met with in married women and in males of delicate constitution, especially about the age of puberty. In these latter cases, there is scarcely a shadow of distinction between it and anæmia, proceeding from causes which leave no doubt as to its nature. I shall therefore consider it under the present head.

Symptoms.—When the complaint is fully formed, there is commonly universal paleness of the skin; the lips, tongue, and mucous surfaces in general are also strikingly pale; there is extreme whiteness of the conjunctiva; and the whole surface of the body appears bloodless. Sometimes the face is yellowish or sallow, and has a waxen aspect. With this change of color, there is often a puffiness of the face, especially of the eyelids; the skin seems semi-transparent, and when the fingers are held up, the light shines through their edges. The lower extremities are apt to be edematous. The patient is feeble, and cannot bear much

exertion, to which also he is usually indisposed. The circulation is irregular, but almost always weak. The pulse is often full, frequent, and thrilling or vibrating; but it is soft, and easily compressed, showing a want of energy in the heart's impulse. It is almost always greatly quickened by bodily exercise or mental emotion. When the patient is entirely quiet and in a recumbent posture, it is often small, rather slow, and feeble. Palpitation of the heart is a very common symptom. It is sometimes continuous, sometimes irregularly intermittent, and may be induced by the slightest causes, mental or physical. Violent exertion often throws the heart into the most tumultuous action. Pulsation in the carotids and jugular veins is often obvious. The respiration, though quiet when the patient is at rest, becomes hurried and even painfully agitated under exertion, as in running, ascending heights, etc. The nervous system is often greatly disordered. Vertigo, dizziness, and a feeling of faintness are very common; and spasmodic movements of the muscles, sometimes amounting to convulsions, are not unfrequent, especially in females. Violent and obstinate neuralgic pains in the head, side, breast, or other part of the body, are also frequent attendants upon the disease. The secretions are sometimes diminished; and, associated with this condition, are extraordinary dryness of the skin, brittleness of the nails, and harshness of the hair. In other cases, on the contrary, there are profuse and exhausting sweats. In females, the menses are almost always either altogether wanting or greatly deficient, being scanty and light-colored or even serous. The bile is also frequently scanty; and costiveness, with unhealthy alvine evacuations, and a dyspeptic state of stomach, are extremely common symptoms.

In its earlier stages, the disease is usually very manageable, and, when there are no organic complications, and the patient can be withdrawn from the continued influence of the causes, may in general be cured, or at least placed in a fair way of recovery, in a period of time varying from two to four weeks. Under opposite circumstances, and especially when improperly treated, it may terminate fatally.

When long continued, it is apt to induce dropsy, and probably also organic disease of the heart. The excessive action into which this organ is constantly thrown by the calls from the capillaries for a more rapid current of blood to supply the deficiency of nutritive material, leads to its enlargement, while defective nutrition renders it soft and flabby.

In the treatment of this disease it is of the utmost importance to remove the causes. While these continue to act, the use of remedies will be of only temporary benefit. Should the digestive system be in disorder, it must be corrected; constipation must be obviated; any hemorrhage or other drain which may exist must be arrested; the menses, if retained, suppressed, scanty, excessive, or otherwise irregular, must be restored to the healthy state; and, in general, any other existing disease which may impair the digestive and assimilative processes, or debilitate the system at large, must, as far as possible, be removed. The modes of treatment which may be necessary for these purposes are given under the heads of the affections respectively to be corrected, and need not be repeated here. The closest attention must be paid to the peculiar circumstances of the patient; and whenever any moral cause can be discovered to which the complaint may in part or wholly be ascribed, efforts should be made to obviate its influence. Moderate exercise in the open air, and especially on horseback, should be encouraged; the patient should sleep in well-ventilated apartments; and the ill effects of irregularities of temperature should be prevented by flannel next the skin. All these measures, by invigorating the general health, will have a tendency to produce a more copious supply of well-conditioned blood. The same end will be promoted by a nutritious and digestible diet, such as that recommended in cases of dyspepsia.

The medicines best adapted to the disease are tonics, and especially the chalybeates, which, besides an invigorating influence over the process of digestion and the vital processes generally, have a peculiar power of increasing the richness and redness of the blood, by an operation not exactly understood. They produce, indeed, the very effect

that is most wanted in this disease—an augmentation, namely, of the proportion of red corpuscles. Hence the preparations of iron have been long considered almost as sovereign remedies in chlorosis. It matters little which of the preparations is employed, provided the iron finds access into the system. That one should be selected which irritates the stomach least, and is most readily absorbed. The preparation of burnt copperas and elecampane root, given under the head of DYSPEPSIA, is the form I have found most successful; but the common domestic form of vinegar and nails answers very well when the stomach can take it. When the case is one of pure anæmia, the chalybeates alone, united with a proper diet, will be sufficient for the cure. But when the digestion is feeble, they may be advantageously combined with the simple bitters, such as the extracts or infusions of gentian or quassia, and the powder or infusion of columbo; and the combination will be rendered more acceptable to the stomach by the conjunction of some aromatic, as ginger or cinnamon. Mild laxatives may be added in cases of constipation; and of these, when uterine disorder is not involved, the best is rhubarb. But if amenorrhœa exist, aloes is the appropriate laxative, and should be given with each dose of the chalybeate in the quantity of one or two grains. The mineral acids are sometimes useful when the appetite is very languid; and if the liver is functionally deranged, the nitro-muriatic acid should be selected. But care should be taken that they do not prove injurious by a chemical incompatibility with the particular chalybeate employed. Nervous derangements may be combated by the occasional use of the antispasmodics, especially valerian and assafœtida, and of the narcotic extracts, such as those of hyoscyamus and conium. The anodyne alterant (*see* DYSPEPSIA) answers most admirably in these cases. The severe neuralgic pains which often attend the complaint may be relieved by chloroform liniment or blisters applied near the seat of the affection, and, if necessary, sprinkled with morphia after the removal of the cuticle.

It will often be found useful, in order to hasten or con-

firm convalescence, or even as a remedy in obstinate cases, to send the patient upon excursions to chalybeate springs at a distance from home, so as to combine with the medicinal effect of the iron the happy influences of exercise, pure air, novelty of scene, and the enjoyments of agreeable society. Unless complicated with serious organic lesions, the disease may generally be cured, or very materially relieved, by the means above detailed, in a period of time varying from two to six weeks.

SCORBUTUS, OR SCURVY.

Scurvy may be defined to be a disease in which the blood is depraved, and the system debilitated, with a tendency to hemorrhage and petechiæ, and to local congestion or feeble and imperfect inflammation in various parts of the body, but especially in the gums, and without any necessary febrile complication. There can scarcely be a doubt that its essential character is an altered state of the blood, arising from want of proper nourishment, and that all its phenomena flow directly or indirectly from that source. As this disease is never seen in this plentiful country, even among the most destitute poor, we will not occupy space with a detail of its symptoms and treatment, but will refer the reader to regular works on the practice of medicine.

PURPURA.

Purpura consists of a morbid condition of the capillaries, owing to which blood is effused into the different tissues of the body, the effusion giving rise to the formation of sanguineous patches of various sizes.

The spots vary in color, being either red, purple, livid, or reddish-brown; they bear a great resemblance to bruises; pressure does not efface them. This disease must not be confounded with scurvy, which it somewhat resembles. It differs, however, inasmuch as it often appears suddenly, is not owing to any want of vegetable food, and is not attended by a livid, spongy state of the gums.

As purpura is a disease of debility, the *treatment* must consist in the use of good diet; tonics will also be required,

especially the mineral acids, quinine and iron, and acidulous drinks. The oil of turpentine, in small, frequently repeated doses, has been strongly recommended.

HEMORRHAGE.

By hemorrhage is meant an escape of blood from the vessels in which it is contained.

In *active hemorrhages*, signs of irritation or active congestion, in the part affected, often precede the eruption of the blood. These are somewhat different in different organs. Among them are, a sense of oppression, fulness, weight, warmth, titillation, and even pain; and when the part is visible, an obvious redness, vascular distention, and increased force of pulsation in the neighboring arterial trunks. Simultaneously with these symptoms, coolness of the extremities, and rigors sometimes occur, followed by febrile reäction; and both the local and general disturbance continues usually, to a greater or less extent, for some time after the first appearance of the hemorrhage, though the discharge has a tendency to relieve it. The blood is usually bright red and coagulable; but the clot is in most cases large and soft. Active hemorrhage occurs only from one organ, and not from various parts of the body at the same time, as often happens in passive hemorrhages. The affection occurs most frequently in young, robust, and florid individuals, accustomed to full living, without sufficient exercise; circumstances which strongly favor the production of a plethoric state. But it is not unfrequent also in a very different habit of body; in meagre and delicate persons, in whom there is a rapid production of blood, in consequence of a vigorous digestion without a corresponding tendency to its expenditure in the process of nutrition. When not associated with organic disease, active hemorrhage in general readily yields to treatment.

Passive hemorrhages are neither preceded nor attended by local or general excitement, unless some other disease exist at the time, such as a malignant fever, of which the hemorrhagic affection is a mere accompaniment; and even in such cases, the excitement is of a feeble character, such as is

produced by some irritant or stimulant influence operating upon real debility. On the contrary, the symptoms are those of a depressed condition alike of the vital forces and vital actions. There is a feeling of languor, a deficiency of muscular strength, and weakness of the circulation, though the pulse is sometimes more frequent than in health, especially during exertion. The capillaries are indolent; the blood circulating very slowly through them, and imparting, in consequence of its stagnation, a somewhat dark hue to the surface, which is otherwise pale. Pressure often occasions the marks of a bruise, and slight contusions give rise to ecchymosis. The blood which escapes is dark-colored, sometimes almost black, and little disposed to coagulate, or altogether uncoagulable. The serum and clot separate but imperfectly, and the latter is seldom or never cupped. The fibrin is deficient, while the red corpuscles are undiminished. Sometimes the blood is like reddish serum. The hemorrhage is not usually confined to one organ; but blood escapes at the same time from different points of the mucous surfaces, and is not unfrequently extravasated into or beneath the skin, forming petechiæ and ecchymoses. The affection is much less frequently original than attendant on other diseases, as malignant small-pox and scarlatina, typhus fever, scurvy, and hemorrhagic purpura.

When hemorrhage is considerable, it usually produces signs of depression, such as weakness of pulse, paleness of face, coolness of the extremities, nausea, faintness, vertigo, and cold sweats; when sudden and very copious, it may even induce syncope, preceded in some instances by convulsions. But the depression of the circulation usually causes a suspension of the hemorrhage before it reaches the point of absolute syncope. The fears of the patient not unfrequently coöperate with the loss of blood in producing signs of depression; and sometimes, when the hemorrhage is too slight to be capable of producing directly any constitutional effect, great paleness and apparent prostration result from the former cause alone. The ultimate effects of profuse or often-repeated hemorrhage, are those described under the head of Anæmia.

Hemorrhage is very apt to return after being arrested, in consequence of the persistence of the causes in which it originated. Generally, the periods of its return are altogether irregular, depending on the casual influence of exciting causes during the continuance of the predisposition. Sometimes it assumes a periodical form, returning at certain stated intervals. When it occurs once a year, as occasionally happens, the result may be reasonably ascribed to the influence of the season; when daily, or every other day, it is probably under the operation of those causes which lead generally to periodicity in disease. The most common interval is that of a month; and this is most frequent in females, with suppression of the menses, in whom the hemorrhage may be considered as vicarious to that discharge. Even in men there is sometimes a monthly recurring hemorrhage, especially from the hemorrhoidal vessels, which seems designed to relieve a periodical plethora, and may be considered, therefore, as entering into the health of the individual. Some believe that, in the male as well as the female system, there are a monthly flux and reflux of vital action, which sometimes becomes excessive at the full, and relieves itself by some discharge, especially by hemorrhage. In such cases, the same premonitory symptoms are exhibited as by women before menstruation; and the same dangers are incurred by the suppression of the discharge. Another analogy between this form of hemorrhage and menstruation is, that it is apt to cease spontaneously at a certain period of life.

By the frequent repetition of hemorrhagic discharges, even when of accidental origin, the system sometimes becomes, at length, habituated to them. The processes of digestion and sanguification acquire an activity which serves to secure the health against material injury, by supplying an additional quantity of blood equal to that lost. The hemorrhage then almost ceases to be morbid; and its hasty suppression would endanger plethora, and consequent hemorrhage in other and perhaps more hazardous situations. Thus, the suppression of an habitual discharge of blood from the rectum may cause hæmoptysis, or a fatal apoplexy.

In some persons a strong constitutional tendency to hemorrhage exists, so much so that the slightest causes will often bring on an attack; and when the blood begins to flow, it is exceedingly difficult to arrest it. A slight wound, even the scratch of a pin, will sometimes occasion a serious and even alarming hemorrhage.

Near the termination of certain diseases, or at certain periods in their course, hemorrhage sometimes occurs, with the apparent effect of relieving the morbid action, and even of putting an end to the complaint. The discharge, however, may prove too copious, and, instead of relieving, may aggravate the danger, and even lead to a fatal result. Such hemorrhages have been called *critical*. They differ, however, in nothing from ordinary hemorrhages, which are almost always the result of a morbid state of the system preceding the attack, and not unfrequently serve to remove that state. The only apparent difference is, that, in the one case, the antecedent disease is obvious and well known, in the other is perhaps concealed.

Hemorrhage is seldom fatal by its immediate effects, unless in cases of organic disease of the vessels, as in aneurism; or where the escape of the extravasated blood is prevented, and the functions of vital organs are interfered with by its accumulation, as in apoplexy.

Treatment.—The first consideration, in the treatment of hemorrhage, is how far its diminution or suppression is desirable. When it is situated in a safe place, and at the same time appears to have the effect of relieving some pre-existing morbid affection, more serious than the hemorrhage itself, great caution should be used in employing measures for arresting it. Under such circumstances, it should, in general, be allowed to run its course without interruption. It would be hazardous, for example, to arrest a bleeding from the nose which might appear to be rescuing a patient from apoplexy. Indeed, if the hemorrhage be deficient, it may be desirable somewhat to promote it, and, if prematurely arrested, to favor its return by the application of hot water or hot vapor to the part. Should the bleeding, on the contrary, be in excess, it would be proper to mode-

rate it; and, should it continue after having accomplished the object desired, efforts should be made to arrest it. In all cases, when the hemorrhage is in itself dangerous from its situation, we should endeavor to check it; at the same time employing other measures for obviating any evil which it may have been calculated to remedy. Thus, bleeding from the nose or the rectum may often be left to its course with impunity and even advantage; but from the stomach or lungs, and especially in the closed cavities, should in general be subjected to treatment.

Cold water or ice may be applied as near to the seat of hemorrhage as possible. A powerful effect is sometimes produced by this application made to the arm-pits, between the shoulders, or to the external genitals. The local abstraction of blood by leeches or cups is often highly useful, when the hemorrhage is accompanied with symptoms of local irritation or active congestion. Advantage may also be derived from warm pediluvia; and the effects of revulsion may be usefully produced by means of rubefacients or blisters to the extremities.

When hemorrhage is at the beginning without excitement, or when the excitement has been subdued and the hemorrhage continues, recourse may be had to astringent or other remedies, which operate upon the capillaries, and close their bleeding orifices. If the hemorrhage is very profuse, even though accompanied with general excitement, it may be necessary to resort to some of these remedies immediately; and, under such circumstances, those should be preferred which unite a sedative with their astringent property, as the acetate of lead, or which diminish action in the capillaries without materially affecting the circulation, as appears to be the case with ergot. These may be combined, in cases of excitement, with small quantities of ipecacuanha. The particular remedies of the class of astringents which are applicable to particular cases, will be mentioned under the head of the several hemorrhages. It is here sufficient to say, that almost all the individuals belonging to the class, whether vegetable or mineral, have been used with more or less advantage. The only hemos-

tatic remedies not belonging to this class, which I deem worthy of notice, are the oil of turpentine and ergot, both of which exert an extraordinary influence, under certain circumstances, in arresting hemorrhage.

In connection with the remedies just mentioned, great benefit will often accrue from the use of opiates, or other narcotic medicines, such as hyoscyamus or conium. They are useful by quieting nervous commotion, and thereby equalizing the circulation, and frequently also by relieving those slight irritations of a nervous character which tend to sustain the hemorrhage, such as cough in hæmoptysis, and excessive retching in hæmatemesis. Opium is useful also by directing to the surface, and this tendency should be favored by combining it with ipecacuanha or tartar emetic. Opium and ipecacuanha may often be very happily conjoined with one or more of the astringents, in the same formula.

In cases to which the internal use of astringents is applicable, the same remedies may also often be very advantageously applied locally, when the seat of hemorrhage can be reached in this way, as in bleeding from the nose and rectum. Recourse may also be had, in some instances, to mechanical compression, with very decisive results, when other measures have failed.

In the strictly passive hemorrhages, remedies of a depletory character are inadmissible. The astringents and other hemostatics may here be brought into immediate use; while, at the same time, efforts are made to give due tone to the capillaries, to support the actions of the system in general, and to improve the character of the blood, by the use of tonics and stimulants, with a generous diet.

In vicarious hemorrhages, as the substitute is often more hazardous than that which it has superseded, it is often advisable to endeavor to restore the original discharge, by inviting a flow of blood to the part. This may be done by the use of hot vapor, local warm baths, and various stimulating applications, as alcohol, ammonia, etc. The same rule applies, when the hemorrhage has resulted from the

suppression of some healthy secretion, as the menses, or the drying up of some habitual discharge, as that from old ulcers, etc. In the latter case, perpetual blisters or issues should be established as near as possible to the original seat of disorder. When it is thought advisable to restrain or altogether arrest an habitual hemorrhage, which has become constitutional, measures should be simultaneously taken to supply the place of the suppressed evacuation by means of purgatives, blisters, issues, setons, etc.

The treatment of those hemorrhages which proceed from a strong constitutional, family, or hereditary predisposition, must be conducted upon general principles.

The treatment adapted to the interval of the attacks of hemorrhage remains to be considered. Here also it is necessary to refer to the state of the system. In active hemorrhage, it is important to regulate the diet, so as to obviate plethora and vascular excitement. But it is also important not to carry a system of reduction so far as to produce debility; for this rather favors than prevents those irregularities in the circulation which lead to congestion and consequent hemorrhage. The quantity of food, and its quality in relation to nutrition and stimulating power, should be somewhat under the standard adapted to a state of health. Exercise is also important, in order to maintain an equable vigor in the various functions, and thus obviate local determinations. Passive exercise, as in riding, driving, and sailing, is preferable to active, because less calculated to call particular organs into excessive action. All excitements, physical or mental, should be scrupulously avoided.

In the passive form of hemorrhage, the great object in the intervals should be to restore vigor to the functions without over-exciting them, and a healthy constitution to the blood. This is to be effected by a nutritious diet, fresh air, passive exercise, and agreeable mental occupation, assisted occasionally by tonic medicines, especially the simple bitters, quinine, and the preparations of iron.

PARTICULAR HEMORRHAGES.

After what has been said upon *Hemorrhage* in general, it is not necessary to dilate upon particular cases, but as most of these admit of some peculiarity of treatment, they will be run over in order, and very cursorily considered. Hemorrhage from the mucous membrane will first be considered, as that is by far the most common.

EPISTAXIS, OR BLEEDING AT THE NOSE.

Young persons are very subject to this; their digestive organs being usually very active, and a rapid generation of blood being the consequence, the over-distended capillaries relieve themselves by throwing off the blood through the numerous pores in the delicate lining membrane of the nostrils. Usually this is a very innocent form of hemorrhage, and requires no treatment, except, should it be profuse, or continue too long, when the usual popular remedies will generally be sufficient, such as cold, applied directly to the nose, or to the back of the neck, or to the genitals. But should these fail, then immerse the feet and legs in water, as hot as it can be borne, and still continue the cold. Should this fail, at once resort to injections, into the nose, of a strong solution of alum; and if it still continues, plug up the nose with a piece of *fat bacon*. I have never known this last remedy to fail to stop the bleeding immediately. The meat should be trimmed so as to fit the nostril, and long enough to reach clear through to the fauces. This will give no pain, and will only, for awhile, feel a little unpleasant.

In cases of much weakness, in which the hemorrhage is passive, every means which are calculated to improve the general tone of the system are indicated—such as sponging with cold water, good air, nutritious diet, gentle exercise, tonic bitters, iron in some form, cod liver oil, etc.

STOMATTARRHEA, HEMORRHAGE FROM THE MOUTH.

The bleeding in this case is commonly from the socket of a tooth, which should be packed with cotton or lint,

saturated in strong alum water. If it proceeds from spongy gums, try the alum water, and if this fails, make a strong decoction of oak bark, and add to it some essence of peppermint. This should be used daily, with a soft tooth-brush, until the gums assume their proper firmness.

HÆMOPTYSIS, HEMORRHAGE FROM THE LUNGS — SPITTING OF BLOOD.

This is always an alarming disease to the patient, and should therefore receive prompt attention; for notwithstanding it generally proceeds from the same cause as bleeding from the nose, and forebodes no more harm, yet the alarm it occasions, and the strong concentration of the mind upon the lungs, may prove serious in persons predisposed to consumption by directing morbid action to this point.

A teaspoonful of common salt, dissolved in half a pint of cold water, drank at once, will usually arrest it immediately. A powerful stimulant should also be applied to the chest, as a mustard plaster, chloroform liniment, equal parts of spirits of turpentine and camphor, etc. If it be vicarious, that is, occur in place of some other discharge, as bleeding piles, or menstrual flux, that discharge should at once be restored.

HÆMATAMESIS, HEMORRHAGES FROM THE STOMACH.

Bleeding from the stomach may proceed, as from the nose, from an oozing of the blood through the pores of the mucous membrane, or it may come from ordinary ulcers, or from cancerous sores in the stomach; what we have to consider now is the bleeding. This may usually be promptly arrested by a draught of strong salt and water, or by flour and water. A teaspoon, heaping full, of wheat flour should be stirred in a glass of cold water, and drank at once.

For the treatment of the condition which gives rise to the hemorrhage the reader is referred to the appropriate head, as inflammation of the stomach, cancer, etc.

MÆLENA, OR HEMORRHAGE OF THE BOWELS.

Bleeding from the bowels is rarely an independent disease, but is most commonly a symptom, or consequence, of

some other disorder, as ulceration in typhoid fever, congestion of the portal circle, from induration of the liver. The quantity of the blood discharged may vary from a few drops to pints. In dysentery, it is usually scant; but in typhoid fever, it is often fatally profuse.

I was once called to a young lady who had typhoid fever, and had commenced improving, when very suddenly hemorrhage of the bowels came on—I suppose from an ulcer which had destroyed the coats of a considerable artery. When I arrived the blood was running from her in a bold, continuous stream, and had already amounted to more than half a gallon. I immediately poured cold water upon her abdomen, and gave a large draught of flour and water. The bleeding stopped in a little over a minute, and did not return.

The proper treatment of this disease is cold applied externally, flour and water, a full dose of opium, and, if necessary, injections of cold water, with alum, or sugar of lead.

HEMORRHAGE FROM THE RECTUM—BLEEDING PILES, OR HEMORRHOIDAL FLUX.

When the bleeding comes from the lower part of the bowels, it may be treated as other cases of hemorrhage from the bowels; but we have in this case a better chance to operate, as we can apply the remedies directly to the bleeding surface by means of injections; and if these should fail, we may make direct pressure by means of a bougie or a piece of hog's gut, tied at one end, and pushed up the bowels, and then injected with cold water until its distention presses hard enough upon the blood-vessels to close their open mouths.

HÆMATURIA, OR HEMORRHAGE FROM THE URINARY ORGANS.

The bleeding in this case may take place in the kidneys, ureters, bladder, or urethra. The bleeding is rarely profuse, and usually is only important as indicating the existence of some other disease; it sometimes leads to serious consequences by a clot forming a nucleus for the forma-

tion of a stone in the bladder, or by plugging up the urethra, and preventing the passage of urine. In this case water should be freely and forcibly injected into the urethra to break up and wash out the clot, or a bougie may be used for pushing it back into the bladder. The same general means may be used in this case as in hemorrhage from the bowels. Injections of cold water and laudanum will often have a most happy effect.

MENORRHAGIA, OR UTERINE HEMORRHAGE.

Hemorrhage from the uterus may be distinguished from profuse menstruation by the blood coming away in clots. It requires no peculiar treatment, the remedies being the external application of cold, flour and water, followed by a full dose of opium, or Dover's powder, and if the flooding be dangerously profuse, by plugging up the vagina with soft cloths, saturated with alum water, or lead water. If the hemorrhage be habitual, it may often be prevented by giving a full dose of salts and soda a few days before the expected attack, and, on the appearance of the first symptoms, giving five or six grains of Dover's powder, and repeating it every two hours, until all uneasiness is allayed.

HEMORRHAGE FROM THE LIVER.

In another place in this work I have alluded to the peculiarity which exists in the circulation of the liver by which a large vein, upon entering that organ, subdivides and is distributed through its substance in the manner of an *artery*, by which arrangement the circulation in this viscus becomes necessarily slow and of feeble force, causing congestion to be easily produced, and thus congestion, when carried to a certain extent, will necessarily render a rupture of the delicate investing membrane of these vessels of easy occurrence; we consequently often have hemorrhage from the liver as a concomitant of all those forms of diseases which occasion great engorgement in what is known as the *portal circle*.

The blood which is discharged in these cases is always dark and thick, being usually a good type of what is known

as grumous blood. This form of hemorrhage is very often salutary by directly relieving engorgement of the liver; but should it become excessive, it should be arrested by a sudden dash of cold water upon this part of the body, which, by causing a shock, will bring about a contraction of the blood-vessels, and thus arrest the hemorrhage.

Very frequently what appears to be a hemorrhage from the liver is nothing more than a passing of the blood from the portal veins into the billiary ducts without having undergone the usual change which manufactures *black bile* from *black blood;* in this case the blood presents the appearance of being partially decomposed. In whatever disease this kind of discharge appears, it indicates a dangerous condition, and should be met promptly by every means calculated to arouse a higher mode of action, such as the cold *douche*, powerful stimulating embrocations, or cataplasms, general stimulants, as alcoholic stimulants, ammonia, etc.

HEMORRHAGE FROM THE SKIN.

Bleeding from the pores of the skin is a very rare occurrence, but it sometimes takes place. I once saw a very remarkable case in which the blood oozed from every part of the surface where the skin was thin, as the eyes, ears, arm-pits, etc. A bold administration of stimulants and opiates saved my patient.

Effusion of blood into the cellular tissue is more common, as in *purpura*, and must be treated by stimulants and tonics. Sometimes the bleeding is of the active kind, and considerable tumors are formed, which, if not speedily absorbed, may cause abscesses. These cases should be treated by friction and compression.

Very rarely there is hemorrhage from the serous surfaces, as the pleura, pericardium, etc.; but as its existence can never be positively known until after death, I will not trouble the reader with their consideration.

CHAPTER IV.

FUNCTIONAL DERANGEMENTS CONNECTED WITH THE ORGANS OF SECRETION.

This section might embrace all the derangements of all the secreting tissues, including the serous, cellular, and mucous membranes, the skin, and the conglomerate glands; but many of these are more conveniently considered under other functions, in the execution of which the tissues perform an essential part; as, for example, the complaints of the alimentary mucous membrane under digestion, and of the bronchial under respiration, etc. I shall treat here only of the derangements of the serous and cellular tissues, the kidneys, and the appendages of these organs. No arrangement of diseases can be so precise that the different divisions will not occasionally trench upon one another.

DROPSY.

Dropsy may be defined to be a morbid accumulation of watery or serous fluid in the cellular tissue or serous cavities. A certain portion of such fluid is essential to the healthy state of these parts. It is only when the wants of the tissues are exceeded, and an accumulation takes place productive of more or less inconvenience or injury, that it can be said to be morbid, and thus to constitute dropsy.

When the effusion takes place in the cellular structure, it is denominated, if extensive, *anasarca;* if limited to one part, *œdema;* when it affects the arachnoid, it is called *hydrocephalus*, or *dropsy of the brain;* when the pleuræ, *hydrothorax*, or *dropsy of the chest;* when the pericardium, *hydropericardium*, or *dropsy of the heart;* when the peritoneum,

ascites, or *abdominal dropsy*. The name of *general dropsy* is given to the affection when it occupies all or most of these positions, to a greater or less extent, at the same time. The complaint will be first treated of in its general relations, and afterwards in the several localities alluded to.

Dropsy is rather a symptom or result of morbid action than itself a disease. Nevertheless, it usually holds this rank in practical treatises, and, from its own striking characters, and the frequent obscurity of the true pathological condition in which it originates, will probably always continue to do so. The danger in which it frequently involves life, and the consequent necessity of employing measures for its removal, without reference to its source, are other considerations which entitle it to a place in the catalogue of distinct diseases.

Pathological Condition.—The first inquiry in relation to dropsy should be directed towards the pathological condition upon which the serous accumulation depends, and which constitutes the true disease. This is not the same in all cases. Very different, and indeed in some measure opposite derangements of function or structure, are the sources of dropsy. They may all be included under the following heads.

Irritation, Active Congestion, or *Inflammation.*—The serous and cellular tissues, like all other organs of secretion, pour out an increased quantity of fluid when excited. This excitement may amount to inflammation. That dropsical effusion is sometimes associated with this condition of the membrane from which it proceeds, is evinced by the symptoms during life, and the results of examination after death. Pleuritic and abdominal pains, with fever, occasionally precede hydrothorax and ascites; and in some cases of anasarca, pressure upon the edematous part occasions considerable uneasiness. Indeed, inflammation of the serous tissues is generally attended with a fluid exudation, a portion of which has the serous character. When this is speedily absorbed, after the subsidence of the acute symptoms, it is not considered dropsical; but if it continue long, and especially if it increase and become complicated with external œdema, it

is unhesitatingly admitted to that rank. Dissection after death, in such instances, often exhibits decisive evidence of preëxistent or persisting inflammation. In most cases, the inflammation is of a chronic character, and it is not unfrequently complicated with tubercles, which serve to sustain it. But, though inflammation sometimes lies at the foundation of dropsy, it is more frequently the result of mere irritation with vascular fulness. The very act of secretion relieves the vessels, and inflammation is prevented by the occurrence of dropsy.

Debility or *Relaxation.*—An opposite condition of the tissues to that just mentioned may be productive of the same result in relation to dropsical effusion. The secretory orifices or pores are sometimes relaxed and become patulous in debility, allowing the more liquid portions of the blood to pass through, almost without resistance. We observe the same thing in the vessels of the skin, by which the watery part of the blood is often poured out abundantly, in very feeble states of the system, in the form of colliquative sweats.

Passive Congestion.—Distention of the blood-vessels, unattended with irritation, frequently results in serous effusion.

The preternatural fulness of the blood-vessels may be general, affecting the whole circulation, or it may be confined to the venous system, or to some portion of it, as to the portal circle, for example, or to a single limb. When partial, it is apt to be the result of some impediment to the return of blood towards the heart. The character of such impediments will engage our attention when upon the subject of the causes of dropsy. The extent and position of the dropsy will of course be influenced by the locality of the congestion.

Altered Condition of the Blood.—There is little doubt that an altered composition of the blood is occasionally the true pathological condition in dropsy. What is the precise nature of the change has not been certainly determined. It is well known that anemic patients are occasionally attacked by dropsy; and it has been supposed that a watery state of the blood favors the occurrence of the disease.

Deficient Absorption.—In health there is a constant exhalation from the serous and cellular tissues, and an equally constant absorption of the effused fluid; and the two processes so far balance each other that no injurious accumulation takes place. It is obvious that dropsy may arise from an irregular condition of either or both of these functions; from an excess of exhalation, while absorption remains unchanged; from a deficiency of absorption, exhalation continuing as in health; or from an increase of exhalation and diminution of absorption combined.

Symptoms, Course, Termination, etc.—The symptoms which characterize dropsical effusion will be more conveniently detailed under the particular forms of dropsy. The affection sometimes comes on suddenly, with more or less febrile action, indicated by increased frequency and force of pulse, warmth of skin, furred tongue, etc. Sometimes it is gradual in its approach, advances slowly, and is associated with a debilitated state of system, and depressed rather than excited vascular action.

The urine is almost always scanty. In this, dropsies of whatever character, and from whatever cause, generally agree. It is not, however, always easy to determine exactly what constitutes scanty urine. The quantity of this secretion varies exceedingly in different persons, and in the same person under different circumstances, and within the limits of health. The average in twenty-four hours, in healthy individuals, may be stated at two or three pints. In dropsy it is often not more than a pint in the same time, and sometimes is much less. In some rare cases of the disease, the urine remains undiminished, and is even increased, especially in the advanced stages. These are generally cases of debility, in which the serous portion of the blood finds a ready outlet through the relaxed vessels, whether of the kidneys or the serous or cellular tissue.

The character of the urine is variable. In different cases, it is deep-brown, like beer, deep-red and lateritious, bloody, bilious, pale, light yellow or reddish, turbid, limpid, and quite healthy in appearance.

Perspiration is generally deficient in dropsy. The *bowels*

are often costive, and sometimes very insusceptible to the action of purgative medicine, even of the most powerful kind. In some cases, the disease is complicated with chronic intestinal inflammation; and then the patient is apt to be affected with diarrhœa. When this occurs without any amelioration of the dropsical symptoms, and especially in the advanced stages, or when dropsy supervenes during its prevalence, it is usually an unfavorable sign.

Thirst is often one of the most prominent symptoms. It is not confined to the febrile form of the disease, but is often attendant upon the most feeble cases.

The dropsical effusion may occupy any one of the serous cavities, or any portion of the cellular tissue, whether in the interior of the body, or beneath the skin. Gravitation, and consequently the position of the patient, have much effect in determining the position of the fluid, whether in the cavities or the cellular tissue. In the latter, the communication between the cells allows it to traverse the body with little difficulty. Hence, the swelling in anasarca is usually first observed, and is greatest, in the feet, ankles, and legs. Hence, in the cellular tissue of the lungs, the effused fluid generally occupies the lower portion, in consequence of the erect position of the patient.

The disease is confined to no time of life: it is not unfrequent in infancy, is frequent in old age, and occurs at all intervening periods. It is, however, most common towards the decline of life. It occasionally undergoes a spontaneous cure. In such cases, the disappearance of the effusion is generally coincident with a great increase of some one or more of the secretions; with the occurrence, for example, of a profuse diuresis, perspiration, or diarrhœa. Most of the disagreeable symptoms which occur during the progress of the complaint arise from the deranged functions of the various organs, consequent upon the pressure of the effused fluid. Its greatest danger is from the same source.

Thus, respiration and the action of the heart are embarrassed from the pressure of liquid in the thorax; and convulsions, coma, palsy, and apoplexy occur from a similar cause within the cranium. Œdema of the glottis sometimes occa-

sions the most serious consequences. The pressure of the distended fluid in the extremities not unfrequently occasions inflammation of the skin, terminating in gangrene and ultimate exhaustion. More frequently, however, the fatal result in dropsy is owing to the organic diseases in which it originates, as those of the liver, kidneys, and heart. Inflammations, such as pleurisy, bronchitis, and gastro-enteritis, not unfrequently occur in the advanced stages of the disease, and carry off the patient. In some instances, the effused fluid is entirely absorbed towards the close, and the patient dies exhausted, when the inexperienced might be indulging the hope of a favorable issue.

Causes.—I consider as causes of dropsy those which produce the several pathological conditions upon which the effusion depends. In the first place may be mentioned all those capable of inducing irritation or active congestion of the secreting tissue. Of these, one of the most common is exposure to cold, especially in a state of profuse perspiration. If, in this condition, the kidneys, from excess of excitement, or other cause, fail to perform the vicarious office that is thrown upon them, the irritation may be directed to the serous or cellular tissue, and dropsy result.

Secondly, in the catalogue of causes may be ranked those which operate by relaxing and debilitating the tissues, and impoverishing the blood. These are frequently coincident. Among them are insufficient or unwholesome food, insufficient clothing, habitual exposure to damp, cold, and impure air, impaired digestion, excessive secretion, great loss of blood, the intemperate use of alcoholic drinks, and long-continued and exhausting diseases, as irregular gout, scrofula, cancer, and scurvy. Dropsy is often the closing scene of such affections, and its occurrence may generally be regarded as a sure evidence of the breaking up of the constitution. It has been already stated that protracted intermittents may sometimes rank in this class of causes.

Still another, and probably the most frequent set of causes, are those which obstruct, or in any way retard the return of the blood by the veins, and thus occasion venous congestion. These may act on portions of the venous sys-

tem, or on the whole. Simple debility may, to a certain extent, operate in this way, by retarding the returning current of blood from depending parts. It will be apt to do so if aided by posture. Long standing sometimes induces dropsical effusion in the lower extremities of feeble individuals. Pregnancy, uterine tumors, and enlarged ovaries, are thought to produce the same effect by pressure on the veins. Other diseases often prove a cause of dropsy, as scarlet fever, diseases of the liver, heart, kidneys, etc.

Dropsy very generally yields readily to remedies. Within my own experience it has usually proved curable, when not dependent on tuberculous inflammation of the tissue affected, or upon organic disease of the viscera, as the heart, liver, and kidneys. Even in these cases, the dropsical symptoms will often disappear under appropriate treatment, and, if at the same time the organic affection be cured, will not return. Thus, permanent cures are not unfrequently effected of ascites dependent on chronic inflammation and engorgement of the liver; and the same is true of renal dropsy in the earlier stage of the affection of the kidneys. Occasionally, even when the original disease remains, and marches steadily onward towards a fatal issue, the dropsy, after having been removed by treatment, does not again make its appearance. But much more frequently, under such circumstances, it returns, and constitutes one of the greatest sources of distress to the patient towards the close of his life. Sometimes it may be removed, and will return several times, before it finally gets the mastery.

Treatment.—In a disease so various in its origin and character, no one plan of treatment will be generally applicable. The remedies must necessarily be adapted to the particular circumstances of each case. Nevertheless, there are certain indications which should always be kept in view in the treatment. These are—1. To correct, as far as practicable, the particular pathological condition upon which the effusion may immediately depend; 2. To remove by absorption, or otherwise, the effused fluid; 3. To remedy any disease, whether cardiac, hepatic, or renal, which may act as the remote cause of the dropsy; and, 4. To support

the strength of the system. We shall often find that the same remedy will answer more than one of these objects; and that, where two or more remedies are required, they may very generally be given conjointly; so that, in detailing the treatment, the several indications cannot be exactly followed without the inconvenience of ceaseless repetition. They will, however, be borne in mind in the following observations, as they always should be in practice.

When there is reason to believe that the effusion is the result of an inflammatory or highly irritated condition of the exhaling tissue, and the general symptoms are those of active febrile excitement, or, even in the absence of fever, should the pulse be full and strong, blood-letting may sometimes be employed with much benefit. It not only diminishes the secretory irritation, and thus checks the effusion, but disposes to the absorption of the effused fluid, according to the well-established principle, that the fulness of the blood-vessels and the activity of absorption are in an inverse ratio to each other. The amount taken must be regulated entirely by the condition of the system. The frequent repetition of small bleedings is, I think, highly objectionable; for, though it may succeed in relieving the patient for a time, it will be apt to leave him afterwards still more disposed to the disease than at first. It is well known that frequent losses of blood have been the cause of dropsy by rendering the patient anemic. It is only, therefore, in cases presenting a decided elevation in the grade of general action, that bleeding is admissible. In cases of the same general character as those above alluded to, with little or no increased activity of the circulation, it would be safer, as a general rule, to trust to the refrigerant diuretics and hydragogue cathartics without bleeding; this being employed only when clearly indicated.

When, instead of irritation of the secreting tissues, we have relaxation or debility, with an impoverished condition of the blood—perhaps a scarcely less frequent condition than the former—a wholly different treatment is required. The indication now is to improve the condition of the blood, and give tone and increased contraction to the tissues. For

this purpose, the preparations of iron, and those of Peruvian bark, are, upon the whole, the most efficient remedies. Carbonate of iron, conjoined with the sulphate of quinine, may be given three or four times a day; and it will often be found convenient to unite in the same mass any diuretic or alterative medicines which the case may require, such as squill, digitalis, calomel, or the mercurial pill. The preparations of iron may be varied to meet the circumstances of the case. The tincture of chloride of iron, and the solution of the iodide, would seem to be peculiarly appropriate; as they add diuretic to their tonic and astringent properties. The pure bitters are much used. Among the remedies occasionally employed is the decoction of pipsissewa, which is, at the same time, mildly tonic, astringent, and diuretic, and is admirably adapted to mild cases of this kind, requiring a gentle impression very long continued. Iceland moss has also been highly commended. No means will probably be found more efficacious in dropsy, originating in low or bad states of the system, than the *fever syrup*—it alone has succeeded in arresting the disease in my hands and in the hands of others.

Dr. D. C. A. Moses, of Eldridge, Ala., writes:

"You say nothing in your work of using your fever syrup in dropsy. Now if you never have used it in such cases, give it a trial: it will not disappoint you. The cases that I have used it in are such as are recognized by the profession generally as incurable, cases of long standing in the old and feeble, and which depend upon general atony of the whole system." A dessert-spoonful after each meal will usually be sufficient. It acts more efficiently when given in an effusion of some of the diuretics of the vegetable kingdom, as Indian arrow-root, watermelon seed, parsley-root, etc. I think the Indian arrow-root is the best. A wineglass of the strong infusion is a proper dose.

To fulfil the same end of improving the condition of the blood, a diet composed chiefly of the most nutritious and digestible animal food should be recommended, and porter or ale may be given for drink.

Conjointly with attention as above directed to the gene-

ral condition of the system, whereby we may check the disposition to excessive exhalation, we should endeavor to fulfil the second indication, that, namely, of removing the effused liquid. This is done most effectually by promoting other secretions. We thus diminish the amount of circulating fluid, and proportionably favor absorption. At the same time, the tendency to exhalation is incidentally diminished by the same means; and if inflammatory excitement of the tissues exist, it is relieved by the depletion effected, and by a revulsive direction of excitement from the seat of disease to that of the stimulated function.

Diuretics.—The symptoms of the disease strongly invite attention to the secretory function of the kidneys as that which especially demands stimulation. The urine is almost always scanty; and the progress of the effusion not unfrequently bears a close and direct relation to its diminution. To increase the action of the kidneys would, therefore, seem to afford a probable chance of relieving the disease; and experience has abundantly confirmed the deduction. No remedies prove more effective in the cure of dropsy than diuretics. When they can be brought to act freely, the disease is almost always moderated, if not removed. Of the diuretics, I have, within my own experience, found the bi-tartrate of potassa, or cream of tartar, most successful. Where no organic visceral disease or tuberculous deposition has been at the root of the malady, and when the strength of the patient has been sufficient to hold out under the continued use of the remedy, I have generally been able to cure dropsy by this diuretic, with or without adjuvants, according to the apparent requisitions of the case. But, in order to produce the greatest effect, it must be given properly, and in sufficient quantity. Attention is frequently not paid to the comparative insolubility of the cream of tartar, and the patient takes only the liquid which may have been directed as the vehicle, leaving most of the medicine at the bottom of the vessel. Many practitioners content themselves with directing half an ounce or an ounce to be taken at one dose, every day or every other day. The medicine thus given acts as a purge, and, being removed from the

bowels, is not absorbed, and consequently does not reach or affect the kidneys. A better plan is to direct a certain quantity to be added to a pint of water in a bottle, and the whole to be taken, in wineglassful doses, at certain intervals, in the course of twenty-four hours; the caution being always strictly observed to shake the bottle thoroughly before pouring out the dose, and then to swallow this quickly before the salt has had time to subside. The quantity must vary with the case; and if, upon trial, that first employed should make no impression, it should be gradually increased until it operates actively upon the kidneys. Half an ounce in the course of the day will, in some rare instances, be sufficient; but much more frequently it will be necessary to increase to an ounce, an ounce and a half, or even two ounces, in the same period of time. If the patient should be much purged, it may be proper to administer a little laudanum occasionally, so as to check the discharges, and give the remedy a direction to the kidneys. Should dyspeptic symptoms be induced, they may often be counteracted by employing as a vehicle for the salt, instead of water, an infusion of juniper berries, or wild carrot seed, which are at once gently stimulant and diuretic; and some aromatic, as cardamom, fennel, or ginger, may be added. When such additions are made, the infusion should be separately prepared, and strained before being used as a vehicle. Should the dyspeptic symptoms continue notwithstanding these means, the cream of tartar should be omitted for a time, and afterwards resumed if deemed advisable. I have given these somewhat minute directions from an experience of their usefulness, and the disadvantages which often accrue from their neglect. It has been stated above, that in all cases of dropsy not dependent on visceral disease, or tubercles, nor complicated with too great debility, a cure might be hoped for from this remedy. The only cases in which it is contra-indicated are those of great debility. If the strength of the patient, no matter what may be the form of the disease, should be observed to give way under the continued use of the salt; and if the additional employment of sulphate of quinine, with a nutritious diet and malt

liquors, or a little wine, should fail to counteract its debilitating effects, it must be omitted altogether.

Various other saline diuretics are employed with more or less success. Among them nitrate of potassa probably ranks next in efficacy to the bi-tartrate. Like that salt, it is especially indicated in inflammatory or febrile dropsy; but, being even more sedative in its general influence, and more apt to induce gastric irritation, it is applicable to a less extensive range of cases; and should not be used when there are evidences of debility, or any suspicion of inflammation of stomach. As a remedy in dropsy, not less than two drachms should be given in twenty-four hours. This quantity should be dissolved in at least a pint of water, or of some mucilaginous or diuretic infusion, and a tablespoonful given every two hours.

Squill is an active diuretic, much employed in this disease. It is in fact among the remedies in which the profession have the highest confidence. The oxymel, or syrup of squill, is the best form; a teaspoonful or more may be given every two hours; or equal parts of the powder of squill and blue-mass may be made into pills, and one taken every three or four hours when the liver is torpid.

Digitalis is another most valuable remedy in dropsy. Though it often fails in materially increasing a flow of urine, yet in other cases it operates with great power, producing and sustaining a copious diuresis, and completely eradicating the complaint. It is best adapted to cases attended with debility, or in febrile cases, after bleeding and active purging have reduced the excitement. Any tendency which digitalis may have to purge should be counteracted by opium, which is also a useful adjuvant in some instances, by obviating the sedative effects of the remedy, without interfering with its diuretic action. The best mode of administering this diuretic is in substance or infusion. A tablespoonful of the officinal infusion, in which a drachm of the leaves is employed to nine fluidounces of water, though it is the dose usually directed, much exceeds in amount a grain of the powder, which is the usual dose in the latter form. It would be best to begin with only one-half the

quantity, repeated twice or thrice daily, and to increase it gradually until some symptoms of its action are observed. The dose may in this way be augmented to ten or fifteen grains, or its equivalent. In whatever form or dose digitalis is employed, its effects should be closely watched, and the appearance of a decided impression of any kind should be the signal for a suspension of the remedy or a diminution of the dose. Great increase of the urinary secretion, reduction in the frequency and force of the pulse, or intermissions in its beat, nausea and vomiting, purging, faintness, giddiness, and a tensive pain of the head, sometimes over one eye, are among the signs of the action of the medicine which demand its suspension. The tendency which digitalis has to accumulate, and, after having been given for some time without apparent effect, to break forth suddenly into violent action, must also be borne in mind.

Numerous other diuretics of greater or less power are occasionally employed, either as remedies in chief or as adjuvants. The spirits of nitre may be usefully added to other remedies. The infusion of juniper berries is much used as a vehicle and adjuvant, and will sometimes, unaided, remove moderate dropsical effusion. The compound spirit of juniper is a good addition to diuretic mixtures or drinks in cases of debility. Infusion of parsley-root, and the different species of erigeron or flea-bane, are occasionally administered with benefit, though never solely relied on. Dandelion in decoction or extract is peculiarly adapted to cases of dropsy connected with chronic disease of the liver. Pipsissewa, in the same way, proves useful where a gentle tonic and astringent are indicated in conjunction with a diuretic. Various stimulating substances, with diuretic properties, may be employed in chronic cases, and others attended with great debility. Such are horse-radish, mustard, garlic, buchu, copaiba, oil of turpentine, and cantharides.* The two last-mentioned substances have been recom-

* The following formula for a stimulating diuretic infusion was much employed by Dr. Parrish, and I have used it myself with much advantage in long standing dropsy with debility. Take of juniper berries,

mended in great insensibility or paralysis of the kidneys, with a more or less complete suppression of urine. Besides those mentioned, a long list of substances might be enumerated, which have enjoyed a greater or less degree of credit as diuretics in the treatment of dropsy; but, having been mostly laid aside after experience of their inefficacy, they scarcely merit notice. It is, however, desirable to have at command, in a disease so frequently obstinate and protracted, numerous and diversified remedies, though of very unequal power. The caprices of the stomach, the prejudices and anxieties of the patient, and the frequent failure of even the most efficient remedies, render changes necessary; and, without a long catalogue, we should be compelled to stop for want of sufficient material. Besides, diuretics are notoriously uncertain, so that upon failure with one, it is necessary to resort to another; and not unfrequently a persevering trial of the means within our reach is at length repaid by success when we have almost ceased to hope for it. Much may also be effected by the combination of these remedies. Great advantage has sometimes accrued from two or more diuretics mixed together, which had before severally failed. Numerous formulæ of this kind have been proposed by different authors, which it would be useless to repeat. The combination of the diuretics with tonics has long been a favorite practice in cases of debility, and is no doubt highly advantageous in numerous instances. Thus, squill and the saline diuretics may be given in connection with the infusion, tincture, or extracts of the simple bitters, as gentian or quassia, with the preparations of cinchona, or with the salts of iron. The preparation of burnt copperas and elecampane, given under the head of dyspepsia, will be found admirably suited to many cases of dropsy connected with weakness and a bad state of the blood.

Cathartics.—Scarcely less efficient than diuretics are the medicines belonging to the class of cathartics. They operate upon the same principles, of promoting absorption by

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mustard seeds, ginger root, each, bruised, 1 ounce; horse-radish, parsley-root, each, bruised, 2 ounces; hard cider, 2 quarts. A wineglassful to be taken four times a day, and gradually increased.

diminishing the amount of fluid in the blood-vessels, and of calling off irritation from the morbidly secreting surfaces to the seat of their own action. Those should be preferred which produce copious serous exhalation from the bowels; in other words, the hydragogue cathartics; and even among these there is much room for choice. In febrile and inflammatory cases, the saline cathartics should be employed, in consequence of their refrigerant properties. The best of these for the purpose are perhaps the bitartrate and tartrate of potassa and the tartrate of potassa and soda. These should be given, not in small and repeated doses, as when administered with a view to diuretic effect, but in large purgative doses, at distant intervals. When not of themselves sufficiently powerful, they should be combined with some one of the hydragogue vegetable cathartics, such as senna or jalap. A mixture of jalap and cream of tartar has long enjoyed a high credit in the treatment of dropsy. In chronic cases, when the bowels are torpid, and the whole system exhibits rather a want of due susceptibility to impressions than actual debility or prostration, recourse may be had to the drastic hydragogues. Scammony, black hellebore, buckthorn, (rhamnus catharticus,) gamboge, croton oil, and elaterium, are those which enjoy the highest reputation. Of these, gamboge and elaterium are probably the most efficient. Dropsy not unfrequently yields to the judicious employment of these remedies alone. Gamboge, being apt to irritate the stomach, should generally be given in small doses, say from half a grain to two grains, repeated at intervals of one, two, or three hours, till it operates. Advantage will also accrue from combining each dose with a drachm or two of cream of tartar. The effects of elaterium are sometimes surprisingly prompt and powerful. I have known great distention of the abdomen to yield to two doses of this medicine. In consequence of its violence, it must be administered with caution; and, if symptoms of considerable irritation of the stomach and bowels should occur under its use, it should be at once suspended.

There is a set of emeto-cathartic medicines, possessing diuretic properties, which have been much used in dropsy,

and occasionally with good effect. Such are the broom, (scoparius,) hedge hyssop, (gratiola officinalis,) the inner bark of different species of sambucus or elder, cahinca, and the root of our indigenous apocynum cannabinum, or silk-weed. In relation to the dose and proper mode of administration of these, as well as of other medicines prescribed in this work, see Materia Medica and Dispensatory.

The frequency of repetition of the cathartic must be regulated by the strength and susceptibility of the patient. When the constitution is vigorous, and the bowels not peculiarly sensitive, it may be given every day. In few cases can much permanent good be expected from it if repeated less frequently than twice or three times a week. The purgative, as in the case of the diuretic, may be combined with the bitter tonics, or chalybeates, when these medicines are indicated; and, if the patient should be very feeble, advantage might accrue from the use of the purgative tinctures, as those of senna, jalap, and black hellebore, in connection with other preparations.

Diaphoretics.—In some instances, diuretics will not act, and purgatives are contra-indicated, or have been tried without effect. Here diaphoretics may be resorted to, and will occasionally produce cures; though, upon the whole, they must be admitted to be much less efficient than medicines of the two preceding classes. The best diaphoretic in dropsy is probably the officinal powder of ipecacuanha and opium. It is asserted that dropsy has been cured by large doses of opium alone; but its efficacy is much increased in this combination. To do good, it must be used freely, and the patient kept for a considerable time under its influence, so as to sustain a copious and continued perspiration. In febrile cases, with a strong pulse, preference should be given to the antimonials and refrigerating diaphoretics, as citrate of potassa and acetate of ammonia, with which spirits of nitre may sometimes be combined. During the course of the treatment, the patient should be kept in bed. The effect of the diaphoretic may be much increased by external means. When the skin is hot and the circulation active, the warm bath should be used. But in other instances, the vapor

bath or dry hot air bath might be found more effective. The excessive sweating sometimes induced by temporary confinement in an apartment heated considerably above the temperature of the body would probably prove highly serviceable in some cases of dropsy. Even friction to the surface of the body is said to have effected cures.

Emetics.—When the strength of the patient is sufficient to bear the exhausting effect of repeated emetics, it is probable that they might be advantageously used, as they are well known powerfully to promote absorption. The antimonial emetics were recommended by Sydenham in this disease. At present, however, neither these nor other medicines of the same class are much used in the treatment of dropsy.

Mercury.—This is occasionally a very efficient remedy. Its power of increasing secretion and absorption would appear to render it applicable to dropsy in general; while its antiphlogistic action would render it especially useful in the advanced stages of those cases which have originated in inflammation, whether of the serous and cellular tissue, or of some important organ, as the liver or the heart. Hence, it is often most happily combined with other remedies, whether diuretic, diaphoretic, or purgative, increasing the powers of these remedies, at the same time that it exerts an independent influence of its own. But it is not admissible in purely anemic cases; and in others should be given with caution, as it is unusually apt to salivate in dropsical cases.

Mechanical Means.—When the measures above detailed prove inadequate to the removal of the effused liquid, and the distention becomes painfully inconvenient, recourse may be had to mechanical means of relief, such as punctures with a sharp lancet, and tapping. Great relief is obtained by these means; and occasionally they seem to prepare the way for the efficient action of remedies which had failed before, probably by removing that compression, which may have cramped absorption. It has occurred to me repeatedly to see the kidneys brought in this way into efficient action, and the health of the patient restored when almost despaired

of. These measures, however, require to be used with caution. The particular circumstances which justify or forbid their use will be most conveniently detailed under the different forms of dropsy considered in relation to their position. Remarks upon the subject of blisters as depletory agents in dropsy will be best postponed to the same occasion.

The Indian arrow-root (maranta) is often used as a domestic remedy in dropsy: the infusion made by steeping a handful of the root in a quart of hot water for an hour or two, and then strained and cooled, and a teacupful drank every two or three hours, has sometimes appeared to be the means of bringing away dropsical collections in an exceedingly short time. A distinguished medical friend informed me a short time since that very lately he and two other physicians had about exhausted their skill upon a case of ascites, without benefit to the patient, the kidneys remaining obstinately torpid; when the patient, upon the suggestion of a neighbor, added the tea of the Indian arrow-root to the other means which he had been taking, and that, in the course of twenty-four hours, he passed several gallons of urine, and that the abdomen subsided almost as fully, and nearly as suddenly, as from the operation of tapping.

Diet and Drink.—The free use of drinks was formerly denied to dropsical patients, under the impression that they served to supply additional stimulus to secretion, and at the same time additional material for effusion. This theoretical ground of exclusion still continues, with the superadded reason, afforded by recent investigations, that fulness of the blood-vessels is the greatest impediment to absorption. Nevertheless, experience has decided against these hypothetical deductions; and nature, by the frequently urgent thirst which attends dropsy, and the extreme distress if it be denied gratification, throws the weight of her indications into the same scale. Practitioners now generally leave their patients to their own discretion in relation to the quantity of drink. A good rule is that the liquids should be taken cold, and in small quantities, frequently repeated, rather than in large draughts

at once. Thirst is thus as effectually relieved, while the stomach and blood-vessels are not so much overloaded. The choice of the drink must depend upon circumstances. Cold diuretic infusions sometimes satisfy the patient, and are better than cold water alone. In cases not of an inflammatory character, old cider sometimes answers an excellent purpose; and when spirituous liquors are indicated on account of previous habits or debility, gin should be preferred. The compound infusion of horseradish, mustard, juniper, etc., in hard cider, is sometimes highly useful. No general rule can be given in relation to diet. The practitioner will in this respect be guided by the particular circumstances of each case, enjoining an antiphlogistic regimen in inflammatory cases, nutritious food in the anemic and debilitated, an easily digestible diet in those complicated with enfeebled digestion, and in all avoiding unnecessary interference with the habits and preferences of the patient.

ANASARCA.

This term signifies dropsy of the exterior cellular tissue. It is not usually extended to effusions into the cellular tissue of the interior organs considered separately, as, for instance, into the parenchyma of the lungs, or the submucous structure. Nor is it customary to apply it to dropsical effusions of the exterior cellular tissue when of very small extent and quite local; these being designated by the term œdema.

The first symptom of anasarca which attracts notice is usually a swelling of the feet and ankles, appearing towards evening, and diminishing, if not quite disappearing, before morning. It is distinguished from other swellings by pitting under pressure, that is, by retaining for a considerable time the indentations made by any compressing body. This tumefaction of the lower extremities does not by any means imply that the effusion of fluid has been confined to these parts. The cells of the cellular tissue communicate freely, so that fluid passes readily through them from one part of the body to another. In anasarca the effusion generally

takes place in various portions of the body, sometimes probably throughout the whole exterior structure. During the day the fluid gravitates into the feet, which are the lowest part, and at night is again diffused over the frame in consequence of its horizontal position. Sometimes, however, the effusion actually takes place first in the feet and legs; as in cases of debility, in which the want of energy in the circulation allows the blood to accumulate in the veins of the extremities, and thus to induce a condition highly favorable to the transudation of serum. In some instances, the tumefaction is first observed in the face, particularly about the eyes. This is apt to happen in febrile dropsy, in which the liquid is more quickly effused, and does not appear to travel so rapidly, and in certain conditions of diseased heart, in which the greatest stress of the circulation is on the upper part of the body. Another condition in which the effusion is likely to appear originally in the face, neck, or upper extremities, is that of obstruction in the veins which re-convey the blood from these parts, as in the descending vena cava. Cases of this kind have occurred in which the dropsy was confined to one arm. In certain rare instances of extremely rapid effusion, the dropsical swelling has shown itself simultaneously over the whole surface of the frame.

The swelling of the feet and ankles, in most instances, gradually increases, extends up the legs and thighs, encroaches upon the abdominal and thoracic parietes, and at last reaches the head and upper extremities, so that the whole body becomes bloated, and sometimes to an enormous extent. The parts in which the cellular texture is loose, suffer tumefaction in the greatest degree. The lower extremities are often enormously increased in bulk, and the skin stretched, tense, and shining. Sometimes the cuticle rises in the form of blisters, or the skin itself gives way; an erysipelatous inflammation invades the integuments; the cellular tissue sloughs; and sores are formed, which become the outlets of great quantities of serous fluid, and thus afford much relief to the patient. Instances have occurred in which permanent cures have been effected in this way; but more frequently, though the patient may

obtain some ease to his oppression, the conjoined exhaustion and irritation are more than his enfeebled system can support, and the case terminates fatally.

Most frequently the anasarca when extensive is attended with effusion into the serous cavities, which very much increases the danger, and often proves the immediate cause of death. In some instances, however, the disease runs its whole course without such complication. Sometimes the anasarcous swelling suddenly disappears, and, by a sort of metastasis, is succeeded by dropsical effusion into the ventricles of the brain, or into the thoracic or abdominal cavity.

This form of dropsy is liable to all the diversities of character which have been described under the head of dropsy in general.

In relation to the causes and general treatment, there is nothing so peculiar as to require particular notice. The reader is, therefore, referred to the subject of dropsy in general. A few observations, however, in relation to the local treatment of the disease will be in place here. Bandaging the limbs in some cases proves of the greatest advantage by preventing inflammation and suppuration, while at the same time it promotes absorption.

Small punctures may often be made with advantage in cases of great distention. The quantity of liquid which escapes even from a few of these minute wounds is sometimes astonishing, and the relief to the patient indescribable. After puncturing, the limbs should be frequently bathed with an infusion of mullen leaves and oak bark, in order to prevent inflammation and ulceration from following, which sometimes become troublesome.

HYDROCEPHALUS, OR DROPSY OF THE BRAIN.

The term hydrocephalus is, in this work, considered as embracing only those cases of serous effusion within the cranium which are independent of inflammation.

Symptoms, Course, etc.—The most obvious phenomenon in hydrocephalic patients is the enlarged or gradually enlarging head. The expansion takes place usually in all

parts of the bony case of the brain except the base. As the face is in general not larger than usual in health, the forehead and sides of the cranium are made to project very much, and give to the child a peculiar aspect. In some instances, it is said that the face undergoes a corresponding development, and the whole head appears gigantic. The enlargement is sometimes irregular, affecting especially the forehead or the parietal region, and being much greater on one side than the other, so as to occasion great deformity. The fontanels expand very much, the sutures not unfrequently open, and the bones of the cranium are seen in some extreme cases to be almost floating upon a surface of liquid. Fluctuation can be perceived between them; and the interosseous spaces are either at the level of the surface, or project somewhat above it. It is said that, in some cases in which the collection of water is very great, the head appears somewhat translucent if placed between the eye and the light.

After a length of time, which is exceedingly variable, if the patient survive, the interosseous spaces are gradually converted into bone, and the cranium becomes entire; but it is no uncommon event for the fontanels to remain open in hydrocephalic patients for many years. After the complete ossification of the cranium, the head ceases to expand; and, unless there should also be a cessation of the gradual increase of the effusion, severe symptoms soon make their appearance. While the bones yield readily to the accumulating liquid, and no great pressure is exerted upon the brain, it not unfrequently happens that the general symptoms of the disease are not striking. When the disease attacks children whose fontanels have closed, the expanding force is sometimes sufficient to reöpen them, and this event has happened as late as the eighth or ninth year.

The size which the cranium is capable of attaining in this complaint is enormous. Thus, the circumference of the head in a child two years old, under the notice of Willan, was twenty-nine inches; and of another of fourteen months, seen by Barthez and Rilliet, nearly twenty-three inches. In general, however, the size is much less, and it varies by

every gradation, from the least visible expansion to the largest dimensions mentioned.

The duration of the disease is uncertain. Most of those affected die in infancy. Some live on for many years, and now and then one to adult age, and, it is said, even to old age.

Causes.—The same condition of the blood and of the extreme vessels which sometimes induces dropsy in the cellular tissue and the serous cavities may operate in the brain so as to occasion hydrocephalus, especially when, from a want of union between the bones of the cranium, little resistance is offered to the accumulation.

Treatment.—When the child exhibits signs of scrofulous diathesis, or is anemic, the chalybeates, preparations of iodine, and decoction of pipsissewa, may be used. Revulsion to the scalp, by means of blisters, croton oil, oil of turpentine, ipecacuanha in the form of liniment, or other irritant substances, has also been recommended. Care must be taken, in the use of the remedies, not to exhaust the strength of the patient. Of the diuretics, squill, spirit of nitric ether, bitartrate of potassa, and perhaps digitalis, may be used, though the last always with caution. Cream of tartar, combined, when the patient is somewhat vigorous, with jalap, would be the best cathartic. The fever syrup, given as directed under the head of general treatment of dropsy, has done more in our hands than any other means: cases apparently hopeless have yielded to this treatment.

HYDROTHORAX, OR DROPSY OF THE CHEST.

Though generally applied at present exclusively to dropsical collections in the pleura, the term hydrothorax may be appropriately extended to any case of serous effusion within the thoracic cavity; and in this enlarged acceptation I shall here employ it. There are three positions which may be severally or jointly occupied by this affection: the cavity of the pleura, that of the pericardium, and the pulmonary parenchyma.

Pleural Dropsy.—More or less serous fluid is very often found in the pleural cavities after death, without having

given rise, during life, to any disturbance of health. This may be the result of effusion occurring like copious sweats, in the dying state, or may be purely cadaveric, or may have existed unnoticed during life. To constitute dropsy, the effusion must be so considerable as to derange in some degree the healthy functions. When it exists to this extent, it produces more or less difficulty of breathing, which is increased by any bodily exertion, especially running, or ascending heights, and is greater in the horizontal than in the erect position. The dyspnœa is slight at first, but increases as the disease advances, and often becomes excessive before its close; bearing a close relation to the amount of the effused liquid. The patient lies preferably on the side most affected, generally with his head and shoulders elevated; and in the advanced stages is often unable to lie down at all, maintaining, day and night, continuously the sitting posture. The pressure upon the lungs impedes the pulmonary circulation; and, as a consequence, the face has often a livid or purplish hue, and the lips are sometimes almost black in bad cases. This disease is often associated from the commencement with anasarca; and, when this is not the case, œdema of the face in the morning, and of the feet and ankles towards night, is very apt to make its appearance before the close.

The *causes* of pleural dropsy do not differ from those of the general disease. It originates most frequently in organic affections of the heart, the great blood-vessels, or the lungs, and is apt to be associated with tubercles in their earlier stages. As in all other forms of dropsy, the effusion may depend upon inflammation of the secreting membrane. Some authors consider the serous effusion arising from this cause as distinct from dropsy, but fail to assign a good reason for the distinction. When the effusion is simply serous, it must be considered dropsical, whatever may be its origin. The cases considered as idiopathic hydrothorax are probably, in most instances, the result of a high irritation of the membrane, which has not reached the point of inflammation, simply because the blood-vessels have relieved themselves

by effusion. Sometimes the disease results from a sudden transfer of the morbid process, whatever it is, from the cellular tissue to the pleura; the anasarca disappearing as the hydrothorax occurs.

In relation to the *treatment*, little need be added to what was said under general dropsy. When there is reason to believe that the effusion depends upon an inflammatory condition of the pleura, very great advantage may be expected from occasional cupping, and repeated and long-continued blistering. Of the internal remedies, perhaps most reliance is to be placed upon a combination of squill and calomel, the latter being carried to a slight ptyalism.

Pericardial Dropsy—Hydropericardium—Dropsy of the Heart.—A certain quantity of serum in the pericardium does not appear to be incompatible with health; at least, it is frequently found after death, without any previous symptoms that could have led to a suspicion of its existence. As in the pleura, the probability is that the effusion is partly an attendant on the last agony, or merely cadaveric; but it can scarcely be doubted that, in many cases, it has existed during life. How much may be considered as constituting disease cannot be exactly determined; for the effects from the same quantity vary greatly with the rapidity of its accumulation. A small portion, effused quickly, will embarrass the heart more than a much larger quantity collected slowly, so as to allow that organ to be gradually accustomed to its presence. Corvisart considered six or seven ounces as, on the average, sufficient to indicate a morbid state, and it is probable that less will sometimes interfere with the circulation and respiration.

As in pleural dropsy, there is much difficulty in distinguishing the symptoms produced by the effusion from those of coëxisting diseases, especially of the heart; and not unfrequently the same symptoms have their origin in both affections.

This form of dropsy, when dependent on inflammatory irritation of the pericardium, or on a general dropsical diathesis, is susceptible of cure; but too frequently it is quite

incurable, in consequence of the incurable nature of its cause; and it is generally of this character when very abundant.

In relation to the causes of pericardial dropsy, it is scarcely necessary to add any thing to what has been already stated. It is most frequently the result of disease of the heart, great blood-vessels, or lungs. It has been traced also to a tuberculated condition of the pericardium. As the other kinds of dropsy, it may depend upon simple irritation of the membrane, or upon those general conditions which give rise to dropsy everywhere.

Nor is there any thing peculiar in the treatment.

Pulmonary Œdema.—Dropsy of the Lungs.—This name is applied to serous effusion into the parenchyma, or substance of the lungs. When considerable, it occasions great dyspnœa, hurried breathing, and frequently cough, with the copious discharge of a thin, colorless, frothy liquid. There is more or less dulness upon percussion, which is most evident when the two lungs are unequally or one exclusively affected, the contrast between the two rendering the want of resonance in the dropsical lung more obvious. The respiratory murmur is diminished, but is not altogether lost, unless in parts of the lungs in bad cases. Both the dulness on percussion, and the indistinctness of the respiratory murmur, are most decided in the lower and back portion of the chest. There is a subcrepitant rale during inspiration, resembling that of pneumonia, but not so fine, and attended with the mucous rale, indicative of liquid in some of the larger bronchia. The affection is very frequently accompanied by œdema of the face or extremities, and even general anasarca.

The causes of œdema of the lungs are the same as those of dropsy in general, and need not be repeated here. It not unfrequently accompanies pleural dropsy; and is apt to be found in old cases of disease of the heart, with anemic symptoms. There is nothing special in the treatment. If curable, it will yield to the diuretics, purgatives, etc., employed in general dropsy.

ABDOMINAL DROPSY.

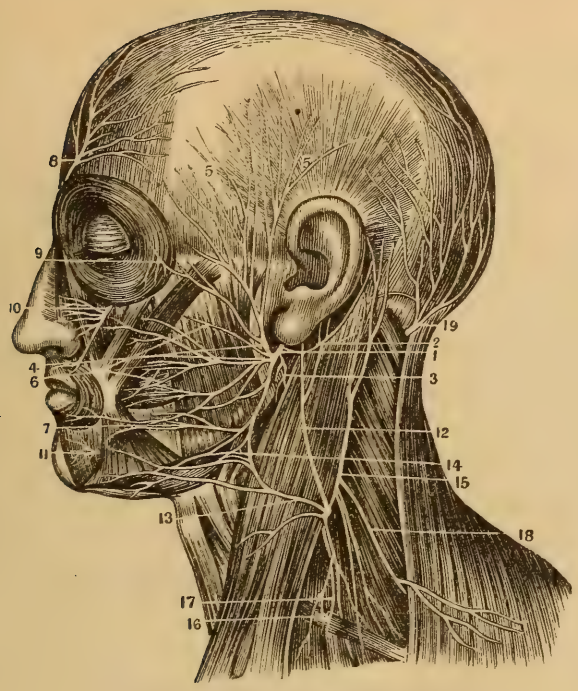
The term ascites is now confined to dropsy of the peritoneum. Serous cysts within the abdomen often produce great distention, and imitate ascites in some of its most prominent symptoms; but they constitute a different affection, having a different origin, and requiring a different treatment. They are usually designated as *encysted dropsy*, or, when connected with the ovaries, *ovarian dropsy*. Though not strictly belonging to the present category in a correct nosological arrangement, they will be most conveniently considered in this place, from their apparently close relation to ascites.

ASCITES.

This is a frequent form of dropsy; but my own observation does not accord with that of the authors who make it the most frequent. It commences usually with an uneasy feeling of fulness in the abdomen, to which the attention of the patient is first called by finding his clothes too tight. The distention is first observable in the lower portion of the abdomen when the patient is in the erect position, and disappears when he lies down. But it gradually extends, and, when the complaint is at its height, the whole belly is uniformly, and often very greatly swollen. The character of the tumefaction is known by the wave-like impulse imparted to the hand placed in contact with the side of the abdomen, when slight percussion is made with the fingers of the other hand upon the opposite side. The sensation produced is quite distinctive, and can scarcely be mistaken.

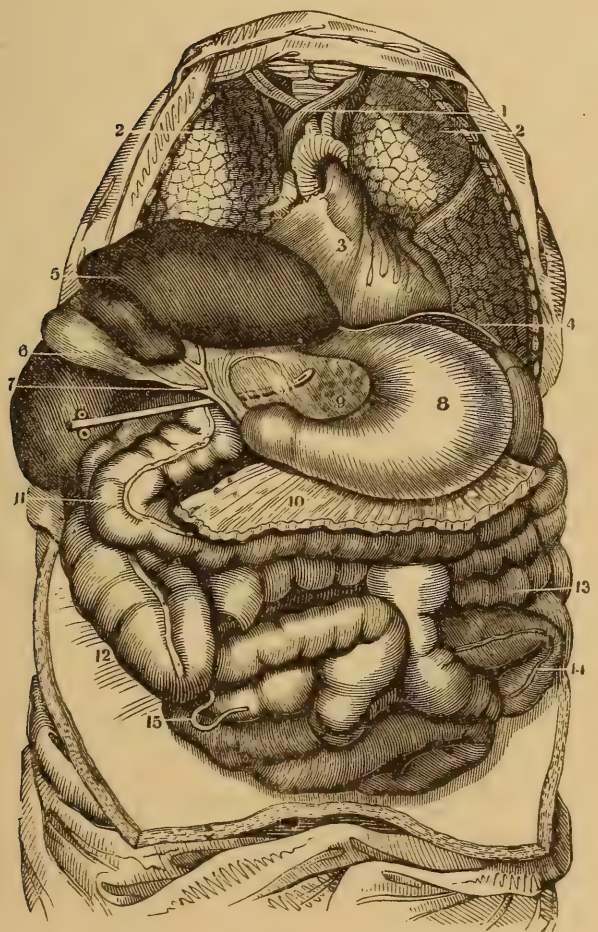
The affections with which ascites might possibly be confounded, are pregnancy, tympanites, an enormously distended bladder, and the various forms of encysted dropsy.

In ordinary cases of pregnancy there can be no difficulty. But when the uterus, as sometimes happens, is greatly distended with serous fluid, so as to impart a decided sense of fluctuation to the hand, or when pregnancy is complicated with ascites, the diagnosis is occasionally embarrassing. In pregnancy, however, the abdomen re-



A VIEW OF THE FACIAL NERVE.

1. The Portio Dura or Facial Nerve escaping from the Stylo-Mastoid Foramen. The Parotid Gland has been removed in order to show the Nerve more clearly.
2. Its Posterior Auricular Branch.
3. The Stylo-Hyoid Branch.
4. The Pes Anserinus.
5. Temporal Branches of the Facial Nerve.
6. Malar Branches.
7. Cervico-Facial Branches.
8. Supra-Orbital Nerve.
9. Sub-Cutaneous Malæ, a branch of the Superior Maxillary Nerve.
10. The Infra-Orbital Nerve.
11. Terminal Branches of the Inferior Dental Nerve.
12. Nervus Auricularis of the Cervical Plexus.
13. The Superficialis Colli Nerve.
14. The Plexus formed between the Superficialis Colli and the branches of the Facial.
15. The Occipalis Minor Branch of the Cervical Plexus.
16. Descending branches of the Cervical Plexus.
17. The Phrenic Nerve.
18. The Nervus Accessorius of the Eighth Pair.
19. The Great or Posterior Occipital Nerve.



A VIEW OF THE VISCERA.

1. The great Blood-Vessels of the Heart.
2. The Lungs of each side.
3. The Heart.
4. The Diaphragm.
5. Under surface of the Liver.
6. The Gall Bladder.
7. Union of the Cystic and Hepatic Ducts to form the Ductus Choledochus.
8. Anterior Face of the Stomach.
9. The Gastro-Hepatic, or lesser Omentum. A Female Catheter has been passed through the Foramen of Winslow, and is seen through the Omentum.
10. Gastro-Colic, or greater Omentum, cut off, so as to show the small Intestines.
11. The Transverse Colon, pushed slightly downward.
12. Its ascending portion, also pushed down.
13. Small Intestines.
14. The Sigmoid Flexure.
15. The Appendicula Vermiformis.

mains more prominent when the patient is on her back, and does not so much bulge out latterly.

Nothing is easier than the diagnosis between dropsy and tympanites. The absence of fluctuation, and the universal resonance in the latter affection, are sufficient distinctions. But the two affections are often complicated, and in such a manner as to render it somewhat difficult to decide how much of the distention is tympanitic, and how much dropsical. The relative degree of fluctuation and of resonance on percussion must decide the question as to the relative amount of liquid and air present. Fluctuation and flatness on percussion must be sought for in the most depending parts of the abdomen.

In relation to the distended bladder, the history of the affection, its attendant symptoms, the regular outline of the dulness in the lower part of the abdomen, and the pain on pressure, would sufficiently distinguish the distended bladder; and, if there should still be doubt, it would be at once removed by the introduction of the catheter.

The diagnosis between ascites and encysted dropsy will be given, when the latter affection is especially considered.

Causes.—Both in relation to the pathological condition and causes of ascites, there is little to be added to what has been said on general dropsy. It is most commonly connected with disease of the liver or other abdominal viscera.

Prognosis.—Ascites, when dependent upon the same causes as external dropsy, and associated with it, is very often cured. When it exists exclusively, it is apt to be much more obstinate, because connected with affections of an intractable or incurable character. But even in this form, those writers go too far who affirm that it rarely gets well. It is true that, in very many cases, it is altogether unmanageable, and ends sooner or later in death. It is true also, that even in cases in which the fluid may be removed by general treatment, it often returns, because the root of the disorder has not been reached. But, nevertheless, instances of recovery are not uncommon. They have repeatedly occurred within my own observation. This result may be looked for with some confidence when the effusion depends

upon simple peritoneal irritation from checked perspiration, repelled eruptions, etc.; and it not unfrequently happens in cases of tumefaction of the liver, from simple chronic inflammation. Occasionally a spontaneous cure takes place by the reëstablishment of the urinary secretion, or the occurrence of copious discharges from the skin or bowels.

Treatment.—This is to be conducted according to the plan already fully detailed under general dropsy. Perhaps the most efficient remedies for the removal of the fluid are the hydragogue cathartics. Elaterium will sometimes act like a charm. But the debilitating effects of purgatives cannot always be borne, and it is necessary to resort to the diuretics. Bitartrate of potassa often answers an admirable purpose. But whatever remedy is employed for the evacuation of the serum, it is very often essential to conjoin with it the use of mercury. This is especially the case when the disease originates in chronic inflammation of the liver. The mercurial should be cautiously employed, so as but slightly to affect the gums, and should be persevered in for a long time, occasionally for several months. Some recommend, under similar circumstances, the use of iodide of potassium; but this should never be relied on to the exclusion of mercury. Frictions with iodine ointment daily, or twice a day, over the region of the tumefied liver, should always be employed.

Well-regulated compression of the abdomen by means of bandages has sometimes been of undoubted advantage. It is applicable to the earlier stages, before the distention has become so great as much to embarrass respiration.

Tapping has been much employed, and various opinions have been expressed of its advantages. While some allow it only as a last resort, merely to obtain temporary relief, when all ordinary means have failed, others have recommended it as a remedy, capable, in some instances, of effecting cures. There can be no doubt that permanent cures have in some rare cases followed this operation; and the opinion held by some, that, by removing pressure from the kidneys, it favors the action of diuretics, is probably not entirely without foundation. Nevertheless, it very gene-

rally fails to do more than yield temporary relief; and the liquid accumulates again, often even more rapidly than before, so as to render a frequent resort to the operation necessary. The quantity of serum which has been drawn off, and the number of times that tapping has been repeated in some instances, are astonishing. In a case of Stoerck's, twelve and a half gallons were evacuated at one operation; Dr. Beall, of Missouri, records a case in which the operation was performed ninety-six times in the course of a few years, and the whole amount drawn off was two hundred and seventy-five gallons and a half; and a case was reported by M. Lecanu to the Paris Royal Academy of Medicine, in which a woman was tapped eight hundred and sixty-six times, and ultimately recovered under compression of the abdomen. (Dunglison's *Notes to Cyc. of Pract. Med.*) Nor is paracentesis without danger. Leaving out of the question the instances in which the intestines or uterus have been wounded, and an artery divided, there is occasional danger from inflammation of the peritoneum, and the operation has repeatedly been followed by fatal effects. It is probable, moreover, that, in most of those cases in which cures have followed it, the same result might have been obtained from other treatment. On the whole, it seems most advisable to resort to paracentesis only when it becomes necessary, from the failure of purgatives, diuretics, compression, etc., to afford the patient relief from great oppression, or to postpone for a period the fatal termination. In the performance of the operation, it is highly important, as the fluid escapes, to make compression of the abdomen by means of a bandage, so as to supply artificially the pressure of the viscera to which the patient has been so long habituated, and the sudden withdrawing of which has repeatedly proved fatal, when this precaution has been neglected.

I have no individual experience with this remedy, having never had occasion to perform it, as other means have always been successful in removing the water, even when the case has been connected with other incurable diseases.

ENCYSTED DROPSY.

In this form of dropsy the fluid is not contained in the general peritoneal cavity, as in ascites, but is confined in a separate apartment, and usually originates in what is known as *hydatids*. These may be attached to any of the abdominal or pelvic viscera, as the liver, pancreas, ovaries, fallopian tubes, etc., but most commonly they originate on or are attached to the ovaries, and hence are known as *ovarian dropsy*. In the early stage of this disease it is easily recognized, as the enlargement will present an isolated condition, and is felt through the walls of the abdomen as a distinct tumor, and in this stage may be recognized by not presenting the hardness to the touch or the sensibility which would characterize a phlegmonous tumor in the same locality. In an advanced stage, when the cyst has become so large as to pretty well occupy the whole of the abdominal cavity, it will not be so easily distinguished from ascites; but even then we may come to a pretty certain conclusion by the history of the case, and from the fact that in changing the position of the body the tumor does not so readily obey the laws of gravitation. But a diagnosis is of no importance, as the disease should be treated upon general principles. Encysted cases, however, are not usually so amenable to treatment as is general abdominal dropsy; but still, even in these cases, efforts for relief should not be abandoned, as they do sometimes succeed.

CHAPTER V.

FUNCTIONAL DERANGEMENTS CONNECTED WITH THE URINARY ORGANS.

Under this title are here included all the diseases of the urinary organs not consisting in organic derangement; consequently all their states of irritation or depression, whether merely nervous, or involving also the blood-vessels, and all the deviations from the healthy performance of their functions, whether secretory or excretory. These diseases may be conveniently arranged in two divisions, the first including affections purely nervous, the second disorders of secretion and excretion.

NERVOUS AFFECTIONS—NEURALGIA.

The kidneys, bladder, and urinary passages in general are liable to attacks of pure neuralgia. These are characterized by pain, generally very acute, without any evidence whatever of inflammation or considerable vascular excitement, and without spasm. Perhaps no disease to which the human system is subject gives rise to more acute suffering than sometimes arises from nervous affections of the ureters extending to the testicles. The author has repeatedly seen strong men weep like children under this affliction; and in no disease will remedies be followed by more satisfactory effects than in the application of hot fomentations to the parts affected in such cases.

Such cases are not usually attended with material derangement of the urine, with pain or other irregularity in its evacuation, or with fever; and, if nausea and vomiting occur, it is merely in consequence of the close

sympathetic connection between the stomach and urinary apparatus.

The causes are the same as of neuralgia elsewhere; occasionally it appears to be connected with hysteria.

The treatment is the same as that of neuralgia seated elsewhere, and is given under the general heading of that disease. It may not be improper, however, to mention here that, when regularly intermittent, it will generally yield to anodynes during the paroxysms, and large doses of quinine in the intervals.

CALCULOUS NEPHRALGIA—SPASM OF THE URETERS—NEPHRITIC COLIC.

This is one of the most painful affections to which the human frame is incident. It depends upon the passage through the ureter of a calculus or other solid body, coming on when this enters the duct upon leaving the pelvis of the kidney, and rarely ceasing entirely until it has discharged into the bladder. The pain is probably excited immediately, either by the roughness of the calculus wounding the mucous membrane, or by its size producing distention. There is reason to believe that concrete organic matter, as blood or fibrin, may sometimes give rise to the affection.

During an ordinary attack of gravel, or in the midst of apparent health, a severe pain is suddenly felt in the loins, shooting to the groin, testicle, or thigh, and often extending into the abdomen, where it closely imitates colic. The space between the ileum and umbilicus is sometimes acutely sensible to pressure. The pain occurs usually in irregular and excruciating paroxysms, with intervals of comparative ease, bearing a close resemblance to spasm. Should it still remain in the bladder, or be caught and fixed in the urethra, the aid of the surgeon should be called in.

This affection is different from nephritis, and requires a different treatment. The pain comes on before there has been time for the development of inflammation, and does not in any degree necessarily depend on that cause. Should the calculus, however, be detained long, inflammation will ensue; and then the two affections will coëxist. The total

absence of fever, while that affection always attends acute nephritis, is generally sufficiently diagnostic of the nature of the complaint.

Treatment.—The prominent indications are to relieve the suffering of the patient during the passage of the calculus, and to render this passage as speedy as possible. If the pain should not be very severe, the bowels should first be evacuated by a full dose of castor oil or other mild yet quick cathartic, so as to prevent any injurious irritation from feculent accumulation. The cathartic may be aided, if it do not operate speedily, by a purgative enema; and, in cases attended with much irritability of stomach, the latter remedy may be employed to the exclusion of the former. After the bowels have been emptied, opiates should be given promptly and freely. When the pain is extremely violent, it is best not to wait for the action of cathartic medicine, but immediately to administer opium, while an attempt is made at the same time to evacuate the lower bowels by an enema containing a portion of oil of turpentine, with other milder ingredients. One or two grains of opium, or an equivalent dose of laudanum, black-drop, or one of the salts of morphia, should be given at first, and repeated at intervals of half an hour, hour, or two hours, according to the urgency of the pain, until this is somewhat alleviated, or the patient exhibits signs of narcotic influence. Should the stomach be irritable, the opiate may be administered with as powerful and prompt effect by the rectum, in double or triple the dose. From forty to sixty or even eighty drops of laudanum may thus be given in a wineglassful of thin starch, and repeated if necessary. If relief should not be afforded by these measures, the patient should be immersed in a warm bath, and kept in it for an hour or more if he bear it well. Indeed, it will generally be proper to have the bath prepared immediately, and used as soon as ready, while the other measures are in progress. Hot fomentations to the abdomen and loins may also be employed.

SPASM OF THE BLADDER.

This is marked by violent pain, with a feeling of constriction in the region of the bladder, which is sometimes contracted into a hard ball. Sometimes the contraction is so great and so permanent as to close the orifice of the ureters, and thus to occasion an apparent suppression of urine, which accumulates in the pelvis of the kidney, and leads to serious irritation of that organ. During the paroxysm, the patient is sometimes affected with cold perspiration, paleness of surface, feeble pulse, and great restlessness and general distress. Often, however, the spasm is less violent and continuous, and the affection altogether much more moderate. From cystitis it is distinguished by the absence of fever, the want of pain on pressure, and its paroxysmal character.

Spasm of the bladder may proceed from stone, from acrid urine or other morbid renal secretion, from similar morbid secretions of the bladder itself in a state of organic disease, from the direct irritation of cantharides or other acrid diuretics taken into the stomach, from sympathetic irritation occasioned by ascarides in the rectum, from gout and hysteria, and finally from exposure to severe cold. When connected with long-continued organic affections of the kidneys or bladder in old people, it is sometimes the immediate cause of death by its shock upon the already exhausted nervous system. It is almost always susceptible of relief when idiopathic, and often ceases without the intervention of remedies.

Treatment.—It is obvious that, when it is dependent on any discoverable source of irritation, this must be removed if possible. So far as regards the spasm itself, it is most effectively treated with opiates, especially in the form of enema, and very freely administered. Warm fomentations or the warm bath should at the same time be used.

IRRITABLE BLADDER.

By this term is meant an increased susceptibility, which renders the bladder morbidly and even painfully impressible

by healthy urine or other natural and wholesome stimulus. This is often a purely nervous complaint, connected sometimes with debility, sometimes with hysteria, and sometimes with a disordered condition of the brain, spinal marrow, or other nervous centre. It may be merely the first step towards inflammation of the bladder, and dependent on the various causes of that affection, acting in a less degree, or upon a less impressible system. (See CYSTITIS.) It is in general distinguishable from other affections by the healthy state of the urine, and by the absence of fever, of pain or tenderness in the region of the bladder, of the symptoms of stone, of stricture of the urethra, and of other signs indicative of organic renal or cystic disease.

In the treatment of this idiopathic irritability, it is necessary to consult the state of the system. If the patient is robust and plethoric, a dose of sulphate of magnesia, the warm bath, and an antiphlogistic regimen, will generally remove the complaint, and probably prevent the development of acute or chronic cystisis. Should the affection be painful, an anodyne enema may be administered. The patient should drink freely of mucilages, and the bowels should be kept loose, though all aloetic or stimulating cathartics should be avoided, and only the mildest laxatives employed. If the complaint be connected with debility, mild tonics and astringents should be used, such as uva ursi, pipsissewa, the simple bitters, the mineral acids, and the tincture of the chloride or the solution of the iodide of iron. Occasionally, when there is no pain, the more stimulating diuretics may be advisable, as the balsams, the turpentines, wild carrot, etc. The occasional use of local or general cold bathing, or the shower-bath, will also be advantageous. In hysterical affections, the antispasmodics may be conjoined with other remedies. Counter-irritation to the spine is also useful.

PARALYSIS OR DEBILITY OF THE BLADDER.

It often happens that, from want of due sensibility, or of muscular power, the bladder is unable to perform its office, or performs it but imperfectly. The symptoms vary

with the part affected. When the neck of the bladder is exclusively concerned, incontinence of urine is the consequence. If the bladder in general is affected, we have retention of urine, in consequence of insensibility to its presence, or inability to contract upon it. These conditions may exist in very different degrees, from mere nocturnal incontinence on the one hand, or slight difficulty of micturition on the other, up to a constant flow of urine from inability to retain it, or a degree of retention sufficient greatly to distend the bladder, and endanger life from injury of that organ. There is seldom, however, complete retention, the urine escaping in small portions by an involuntary stillicidium, especially when the patient sleeps, and thus giving rise to very great inconvenience.

This partial or complete palsy may arise from a direct diminution of nervous energy, as in the gradual decay of strength incident to old age, and in cases of spinal and cerebral disease, producing palsy elsewhere as well as in the bladder; or it may come on as a result of excessive or long-continued excitement, as from venereal excesses, or those organic diseases of the kidneys, prostate, etc., which sustain an incessant irritation of the bladder until they exhaust at once its sensibility and power. In low fevers, this condition of the bladder is a not unfrequent concomitant of the general diminution of nervous energy. It occurs also occasionally in hysteria, as a consequence of the irregular distribution of nervous influence characteristic of that complaint.

When the affection depends upon cerebral or spinal lesion, or upon organic complaints of the urinary apparatus, it must be remedied, if at all, by addressing our measures to the real seat of disease. When the consequence of excessive indulgences, it can be relieved only by a change of habits. In cases associated with general debility, the vegetable tonics, the chalybeates, and the mineral acids, with the cold bath, are the appropriate remedies. Stimulation of the bladder by medicines having a tendency to the pelvic viscera, such as oil of turpentine and cantharides, or by electricity, will sometimes be of great utility in cases in

which the affection is purely local. Hysterical cases must be treated by the means applicable to the same kind of disorder elsewhere. It often happens that much may be done in restoring power to the bladder by inducing the patient to exert his own will vigorously. This is especially true in hysteria, in which a diseased will has often as much to do with the complaint as any other cause. In such cases, caution must be used not to resort too hastily or too freely to the catheter; but, generally speaking, in this disease, it is of great importance not to allow the bladder to become unduly distended; and to prevent this, it is necessary frequently to draw off the urine.

STRANGURY.

Perhaps this should be considered rather in the light of a symptom than a disease. There is, however, a more or less general irritation of the urinary passages, which is short of inflammation, and cannot, perhaps, be more appropriately designated than by this term. It is exhibited in a frequent and irresistible desire to pass water, of which very little escapes, with burning and cutting pains at the neck of the bladder, along the urethra, and at the end of the penis, during and immediately after the passage. The pains often extend to the bladder, up the ureters, and even into the kidneys themselves; and sometimes the rectum becomes involved in the irritation, and tenesmus is induced. The symptoms are those of inflammation of the whole urinary passages; but the affection is often so transient, and yields so immediately to suitable remedies, that it can hardly be considered of that character. It is caused most frequently by irritating substances in the urine, and is a frequent attendant on the different forms of lithiasis or gravel. The most frequent cause of it, however, is beyond all comparison the Spanish fly, either taken internally, or applied as an epispastic. As resulting from this cause, it is often most exquisitely painful, and imperiously calls for relief. The oil of turpentine and other stimulating diuretics sometimes have the same effect.

The treatment is very simple. After the removal of the

cause, so far as possible, an injection of from forty to sixty drops of laudanum in a wineglassful of mucilage will generally afford relief, if not at first, at least upon being repeated. But *bee tea*, made by enclosing twenty or thirty honey-bees in a cloth, and steeping them in a cupful of hot water for ten or fifteen minutes, and then cooled as quickly as possible by setting the cup in cold water, still keeping it covered, and then taken at a draught, will almost always afford complete relief in a few minutes. As auxiliary measures, mucilaginous drinks should be given freely. Warm fomentations, emollient poultices, and the warm bath or half-bath may also be used.

DISORDERS OF SECRETION AND EXCRETION.

The kidneys are undoubtedly emunctories by which injurious substances accidentally present in the circulation, effete matters resulting from the perpetual renewal of the organization, and any excess in the wholesome principles of the blood, are thrown off from the system, and thus prevented from interfering with its healthy actions. In performing this office, they appear to permit the passage of certain substances with little or no change, as water, urea, and various salts, while they occasionally decompose others, and eliminate the results of this decomposition in new forms of matter, probably not preëxistent in the body. From this view of the functions of the kidneys, it is obvious that the urine may vary greatly, both in quantity and constitution, not only in different individuals, but even in the same individual under different circumstances, and yet still remain within the limits of health. Thus it is more or less copious according to the quantity of liquid drank, and the state of other emunctories, especially of the skin. One of the most important offices of the kidneys is to preserve the amount of fluid in the blood in due proportion to the wants of the system. The quantity of urine will, therefore, be increased when there is an excess in this proportion, and diminished when there is a deficiency. Consequently, other things being equal, the individual who drinks more largely than another will pass a greater amount

of urine in the same time, and the same difference will be observed in the same individual at different times, according to his habits in this respect. Again, the urinary and perspiratory functions are so related, that when one is unusually active, the other is in general proportionably inert, and whatever promotes or impedes the one has an opposite effect upon the other. Hence the urine is usually more copious in the winter than in summer, after the use of cold than of hot drinks, and during the day than when the patient is warm in bed.

The quality of the urine is not less various than its quantity. A full rich diet of animal food, supplying more nutriment to the blood than the wants of the economy require, is attended with an excess of the solid ingredients of the urine; while a purely vegetable diet, which leaves the blood somewhat deficient, necessitates a diminished elimination of nutritive matter, and produces, consequently, an opposite state of the secretion. The urine immediately following a meal in which liquids have been taken freely has long been noticed to be very different from that which occurs after digestion has been accomplished, and the rich chyle is poured into the circulation. The former, sometimes called *urina potus*, is abundant and watery; the latter, denominated *urina sanguinis*, is moderate in quantity, but loaded with solid matters. Whatever promotes activity in the general organic processes of the system, as vigorous exercise, for example, and whatever renders it necessary that the system should live upon itself, as starvation and febrile diseases, promote a loaded condition of the urine, because the effete matters are in proportion to the activity of the organic changes. Even the morning urine, which upon the whole may be considered as offering the truest criterion of the normal state of the function, because least interfered with by disturbing causes, is more or less diversified in character.

Ingredients not ordinarily existing in the urine are occasionally added to it in consequence of the use of certain articles of food or drink. Thus, asparagus, horseradish, and garlic impart to it peculiar odorous principles; and

saccharine matter and oxalic acid are asserted to have been found in it, after a free use of sugar in the one case, and of sorrel or rhubarb pies in the other. These foreign impregnations cannot be considered morbid unless productive of some injury in the economy. On the contrary, their presence is probably the result of a preservative process.

It follows from what has been said, that it is impossible to indicate any precise condition of the urine, whether as to amount or quality, which can be considered as the healthy standard. All that can be done is to make some approximation to such a result. It is not surprising that very different opinions have been given by writers. The conclusions here presented are those which have appeared to the author most probable after a comparison of the various statements upon the subject.

In relation to the quantity of urine passed daily, the mean for a healthy man, in temperate weather and without the operation of any extraordinary causes, may be stated at two or three pints. Women generally pass less, because less active and more abstemious.

DIURESIS.

Under this term are included all the complaints consisting in an excessive urinary secretion, with the exception of that which is characterized by the presence of sugar, constituting diabetes.

Instances of diuresis are not unfrequently met with, affecting the comfort of the individual by the frequent and harassing calls to evacuate his bladder, often at the most unseasonable times, interrupting his rest at night, occasioning troublesome thirst, and, if not arrested, producing at length a greater or less degree of debility, and loss of flesh. Such cases are apt to occur in individuals of excitable or nervous temperament, and especially in dyspeptics, who are sometimes greatly alarmed lest an attack of real diabetes may have set in. They are, moreover, not uncommon in people who have passed the middle life, and whose bodily powers have begun somewhat to fail. The affection, in such instances, is apt to be considered as mere irritation of blad-

der; but, upon examination, it will be found that the amount of urine daily evacuated is much above the healthy average.

The urine in profuse diuresis is usually pale or colorless, quite transparent, and of very low density, sometimes scarcely exceeding that of water. Its low specific gravity, the absence of a sweet taste, and the fact that it will not ferment with yeast, are sufficient evidences that it is not of the true diabetic character.

The treatment of simple diuresis must be directed chiefly to the regulation of the habits of the patient, and the improvement of his general health. In the first place, his own will should be brought to the aid of the physician. Occasionally, it is probable that the affection may have originated in, or at least may be sustained by, a habit of excessive drinking. The patient should, therefore, be induced to take as little drink as may be at all consistent with his comfort, and should avoid altogether liquids calculated especially to stimulate the kidneys. The diet, too, should be of a kind least likely to provoke thirst, and salt food, and the use of much salt as a condiment, should be avoided. In order to divert action from the kidneys, all the other emunctories should be sustained in full operation. The liver, if torpid, should be stimulated by nitromuriatic acid; the bowels should be kept regular by rhubarb and aloes, compound extract of colocynth, sulphur, etc., the saline cathartics being prohibited; and efforts should be especially made to promote the functions of the skin by the frequent use of the flesh-brush, by the warm or vapor bath every day or every other day, by woollens next the skin, and by moderate exercise. Nervous irritability should be controlled by narcotics and tonics. Opium often has a very happy effect, and is preferable to the salts of morphia, which I have sometimes known to stimulate the kidneys actively. It may be advantageously given combined with an equal proportion of ipecacuanha at bed-time, so as to obtain at once its diaphoretic and narcotic effect. Of the tonics, the mineral acids, chalybeates, and simple bitters, including the preparations of Peruvian bark, may be employed. In some instances, the disease appears to be connected with laxity of the kid-

neys, and may be treated with astringents. In such cases I have seen the oil of turpentine apparently very efficient.

As dyspepsia is not unfrequently the basis of the disease, the whole regimen and course of treatment adapted to that affection should be made to bear upon it.

DIABETES.

This disease is characterized by an excessive discharge of saccharine urine. It probably consists essentially in the production and elimination of sugar, the diuresis being merely incidental, and dependent on the existence of that principle in the blood. Indeed, there is reason to suppose that the saccharine state of the urine may at least sometimes precede the excessive secretion; and it is known often to remain after the diuresis has for a time disappeared.

Symptoms, Course, etc.—Diabetes is almost never recognized at its very commencement; and it is not usually until after the lapse of a considerable length of time that the attention of the patient is called to it. The symptom which, in general, first attracts notice is the frequency of calls to evacuate the bladder, by which he is often disturbed several times in the course of the night. He soon also observes that the quantity of the urine is much increased, and accident sometimes leads him to the discovery of its sweet taste. If he is now examined, there will be found, in addition to the symptoms mentioned, thirst, a clammy state of the mouth and fauces, a coating of frothy mucus or white fur upon the tongue, constipated bowels, a dry, harsh skin, a sense of weariness or dull pain in the back, loins, and lower extremities, frequent and in some cases almost constant chilliness, a general feeling of lassitude, weakness, and indisposition to bodily or mental exertion, and a daily increasing emaciation. Dyspeptic symptoms are also frequently exhibited; such as sour eructations, oppression or weight in the epigastrium, burning sensations about the præcordia, etc. The appetite, however, is seldom impaired, but, on the contrary, often somewhat increased. Thus affected, the patient may be considered as in the first stage of the disease. If this should continue to advance, the

symptoms assume a more violent character. The discharge of urine is increased, and the craving for drink, and often for food, becomes inordinate and insatiable. From twenty to thirty or even forty pints of water are sometimes drank daily, and enormous quantities of food consumed; and yet the patient is never satisfied, nay, sometimes feels the craving increase with the means used to gratify it. Along with this excessive thirst and hunger, and probably contributing to them, are a parched state of the mouth and fauces, and a sensation of hollowness or sinking, with faintness, at the pit of the stomach. The food, notwithstanding the quantity consumed, produces no increase of flesh. On the contrary, a steadily progressive emaciation is almost always noticed, with increasing debility both of body and mind. The sexual propensity is lost, the spirits depressed, the temper soured, or peevish and fretful, and the memory and intelligence impaired. The lungs and surface of the body exhale a sweetish odor, generally compared to that of hay. The fæces are said to be destitute of their characteristic offensiveness, and to be scanty and very dry. The tongue is now either red at the edges and furred in the middle, or uniformly red and smooth. The gums assume a dark-red or purplish hue, are soft and spongy, bleed easily, and often separate from the teeth, which are thus loosened. With this scorbutic state of the mouth, the breath, instead of retaining the sweetish odor before mentioned, becomes offensive. Occasionally a redness like that of the mouth is observed at the orifice of the urethra, and a sensation of heat is experienced along the urinary passages. Serious organic disease is now apt to set in. Tubercles are often developed in the lungs, with the usual attendant symptoms of pains in the chest, cough, dyspnœa, and purulent expectoration. Sometimes Bright's disease of the kidneys occurs, and is indicated by an albuminous impregnation of the urine. At this stage, the patient sinks rapidly, the emaciation and debility become extreme, the fauces assume a dark-red or aphthous appearance, the extremities swell, the urine diminishes, loses its saccharine character, and at last is almost wholly suppressed, and the patient dies exhausted and comatose.

The presence of sugar may be easily detected by adding a little yeast to the urine, and keeping it at about a blood-heat; if it contain sugar, it will speedily ferment and acquire a vinous smell.

Causes.—These are quite obscure. It appears to be generally admitted that hereditary tendencies, and certain natural or acquired conditions of the constitution in persons whose parents had never been affected with the disease, act as predisposing causes. A residence in cold damp situations, and in miasmatic districts, an impoverished diet, venereal excesses, and the abuse of mercury, are said to have placed the system in a condition favorable to the occurrence of diabetes. Among the exciting causes have been mentioned, exposure to cold, blows or other violence on the back, the drinking of cold water when overheated, anxiety or grief, and various diseases, especially rheumatism and gout, cutaneous eruptions repelled from the surface, and carbuncle or its allied affections. It must be confessed that all our knowledge of the causes of this complaint is exceedingly vague and unsatisfactory. It is most frequent in middle life, and is rare in infancy and old age. Sex appears to have no influence over it.

Prognosis.—This is generally unfavorable. When the disease is submitted to treatment in its earlier stages, there may be some hope of affording permanent relief, though, when apparently cured, the patient is liable to a renewed attack from comparatively slight causes, and constant watchfulness is necessary during the remainder of life. Though the disease is cured, the predisposition remains. In many cases, where complete cures cannot be effected, much may be done towards moderating the symptoms and prolonging the life of the patient. In the advanced stages, treatment is of little avail.

Treatment.—The indications of treatment are to prevent the formation of saccharine matter, which appears to lie at the very foundation of the disease; to diminish the amount of urine discharged, which, independently of its peculiar character, tends, by its excess, to impoverish and deprave the blood, and to produce emaciation and debility; and to alter

the condition of the blood itself, which is probably the direct source of much of the functional and organic derangements which mark the progress of the disorder.

To prevent the formation of sugar, we must alter the functional action of the stomach and liver, particularly of the liver, as it is now known that one of the offices of this organ is to manufacture sugar from the chyle, which is afterwards changed into the constituents of the blood. In diabetes too much is produced, or the necessary after-changes are not effected.

The best we can do, is to put all the blood-making organs in as good condition as possible; and for the accomplishment of this, the reader is referred to the article on dyspepsia for particular details as to the proper means, manner of administration, etc. Animal diet should be almost exclusively used, as it is not readily converted into sugar; bread should especially be avoided, but cabbage, turnip and radish-tops, cresses, etc., may be used.

Of the medicines calculated to diminish the discharge of urine, none is so efficacious as opium. The great advantages to be derived from this remedy are admitted by almost all. It not only very frequently diminishes the flow of urine, but also quiets the nervous irritation of the patient, and renders him much more comfortable. From half a grain to a grain of opium, with an equal quantity of ipecacuanha, or one-sixth of the quantity or less of tartar emetic, may be given at intervals of six or eight hours. Sometimes it may be thought best to give from ten to twenty grains of Dover's powder at bedtime, and none in the course of the day.

Another means of lessening the quantity of urine, is to excite action in the surface of the body, and restore, if possible, the perspiratory function. This should be attempted by the wearing of flannel next the skin, by friction with the flesh-brush, by the warm or hot bath, vapor bath, or hot air bath, by bodily exercise, and by the use of diaphoretics. Of the diaphoretics none is so efficacious as the Dover's powder already mentioned. Carbonate of ammonia is sometimes useful in this way.

It is highly probable that the excessive diuresis may be sometimes at least dependent upon a relaxation of the kidneys; and substances having a directly stimulant action on these organs may prove beneficial. Upon this principle it probably is, that the turpentines and cantharides sometimes lessen the flow. Cures of diabetes have been ascribed to the latter of these medicines. Creosote, also, has been highly recommended.

SUPPRESSION OF URINE—ISCHURIA RENALIS.

By suppression of urine, is here meant either a complete cessation of the secretory action of the kidneys, or a diminution of it so considerable as to be clearly morbid. It is undoubtedly in general, perhaps always, a mere symptom or effect of some other disease; but instances occur in which no other affection is obvious; and in these it must, in the present state of our knowledge, be considered as idiopathic. Besides, a mere symptom or effect, when it constitutes the most prominent feature of the case, and the chief source of discomfort or danger, is often most conveniently named and treated as a disease; as in the instances of diarrhœa, dropsy, and the hemorrhages. Such is the case with the affection under consideration.

It is difficult to determine at what point of reduction the renal secretion can be considered as morbid. The quantity of urine is often very much diminished in health, and sometimes only a few ounces are passed daily for a considerable time, without serious inconvenience. The best rule, perhaps, is to treat every case as morbid in which the secretion is reduced, for any length of time, much below the healthy standard of the individual, without obvious cause, such as excessive perspiration, or extraordinary abstinence from drink. Though morbid results may not always follow immediately, there is danger that they may occur; and cases in which the suppression is entire, or nearly so, should receive immediate attention.

The most prominent sign of suppression is the diminution or suspension of the passage of urine; but it is by no means unequivocal. It may be the result of a retention of

the urine in the bladder, ureters, or pelvis of the kidneys. The first object, then, of inquiry, is in relation to the existence of the latter affection. This would be indicated, if in the bladder, by feelings of uneasiness, fulness over the pubes, dulness on percussion, or more certainly still by the introduction of the catheter, which would be followed by a flow of urine. If in the ureter or pelvis of the kidney, it would be likely to be attended with the symptoms of nephralgia, the passage of a little bloody urine, or of a calculus, and, if long continued, by marks of distention in the region of the kidney, or inflammation of that organ.

From whatever cause proceeding, suppression of urine, if it be complete for several days, and coma supervene, is almost certainly fatal. The cause of death is generally considered to be the depressing and poisonous action upon the brain of the urea accumulated in the blood, in consequence of its being no longer eliminated by the kidneys. It is surprising, however, under how small a daily discharge life may be prolonged, and ultimately preserved. In some instances, too, other organs appear to take on a vicarious office, and to relieve the system by throwing off the urea. Thus, in epidemic cholera, in which the urinary secretion is sometimes entirely arrested, the brain remains remarkably clear, in consequence, no doubt, of the copious discharges from the skin and alimentary mucous membrane. Numerous cases are on record in which the urinary secretion has been wholly arrested for days, weeks, or months, without serious disturbance of health. In these, there have generally been liquid discharges from the stomach, bowels, or skin, which have sometimes had a urinous smell.

Treatment.—In idiopathic suppression, it is highly important to begin with treatment early in the case, when there may be good hope of saving the patient. Blood should be drawn by cups or leeches from the small of the back. At the same time, brisk purgation should be effected by jalap and cream of tartar, senna and epsom salts, or other cathartic combinations having a tendency to act as well on the kidneys as on the bowels. A small addition of elaterium or gamboge, if admissible by the stomach, would probably

be advantageous. Vigorous diuretics should then be administered. Perhaps the most efficacious is cream of tartar, given in the quantity of an ounce or two in divided doses, during the day. But digitalis, squill, nitre, and the spirit of nitric ether, may also be given in various combination, and in as large doses as the system will tolerate. As the case advances, a large blister may be applied upon the small of the back, on each side of the spine, and repeated when the surface ceases to discharge. Emetics, the warm bath, vapor bath, or hot air bath, and Dover's powder, have also been recommended; and, by effecting a vicarious discharge from the skin, may sometimes postpone the occurrence of coma, while they at the same time relieve congestion of the kidneys, and thus enable these organs to feel the impression of remedies more especially directed to them. While these measures are going on, the patient should be allowed to drink diluent mucilaginous liquids, rendered diuretic by suitable additions, as juniper, wild carrot, spirit of nitric ether, and the like. Should the urine be scanty, high-colored, and loaded with lithic acid, no medicine will be found more efficacious than the bicarbonate of soda, [common soda,] which may be given to the amount of two or three drachms in twenty-four hours, as drink, dissolved in a large proportion of water. Of course, the diet should, in acute cases, consist of vegetable food exclusively.

Similar measures are required in cases of suppression, attended with clear evidences of inflammation of the kidneys or the urinary passages. The saline cathartics, and alkaline bicarbonates, aided by the spirit of nitric ether, or other mild diuretics, with the free use of mucilaginous drinks, will often be sufficient. The affection, as it occurs in infants, will in general yield readily to this treatment.

When the disease may seem to depend upon affections of the brain or spinal marrow, remedies should be addressed to these parts especially; and, besides the general plan above recommended, local bleeding and blistering should be employed as near as possible to the seat of the disease.

In those instances of suppression which occur in the last stage of disorganization of the kidneys, whether from ordi-

nary inflammation or Bright's disease, little good can be expected from remedies.

LITHIASIS—GRAVEL—CALCULOUS DISEASE.

Lithiasis is characterized by the deposition from the urine within the body of insoluble matter, in the form of impalpable powder, minute crystalline particles like sand, or solid concretions of various magnitude, with irritation or inflammation of the urinary passages.

In its most healthy state the urine is transparent when discharged, except a slight cloudiness from mucus and epithelium scales, and remains so after cooling, until decomposition begins. But not unfrequently, from slight excesses in eating or drinking, from some peculiarity of diet, or from some fugitive impression that can scarcely be considered morbid, the urine, though transparent when evacuated, becomes turbid on cooling, and deposits a sediment of amorphous or imperfectly crystalline matter. When temporary, or productive of no considerable inconvenience, this is not looked on in the light of a disease. It is, on the contrary, a method by which the system frees itself from superfluous matters which might otherwise occasion trouble. But when the deposition continues long, or recurs frequently, and especially if the urine should be turbid at the time of discharge, it should be regarded as suspicious, even though no present inconvenience may be experienced; for, so long as this state of urine remains, there will be liability to gravelly or calculous deposition within the body, and consequent disease of the urinary organs.

The sediment may be either—1. An amorphous powder without grittiness; 2. A sandy matter consisting of minute crystalline grains, of a gritty feel, but not distinctly visible; or, 3. Amorphous or crystalline concretions, sufficiently large to be readily distinguished by the eye, and denominated calculi. Morbid effects in the urinary passages proceed in general only from the two latter kinds of sediment. The presence of an impalpable powder in the urine is of consequence merely as it indicates a disordered state of system, or a liability to the occurrence of the other forms

of deposition, or as confirmatory of other evidence of the existence of a calculus in the body, and affording the means of ascertaining the character of the calculus.

The chemical nature of the sediment is very different in different cases. All the deposits, however, may be arranged under the three heads of—1. *Uric acid, or the urates;* 2. *The phosphates;* and, 3. *Oxalate of lime.* As each of these is consequent upon a peculiar state of system, and attended in a certain degree by peculiar symptoms, they will be most advantageously treated of separately, so far as regards the deposition itself and its causes. The morbid effects of the several deposits, as closely analogous, will be treated of conjointly, and the same course will be adopted in relation to the treatment.

Lithic Gravel.—This is much the most common form of gravel, and is highly important as, in most instances, the foundation of stone in the bladder. The deposit consists of uric acid and urate of ammonia, separately or conjoined, and, in some rare instances, of urate of soda. These substances, when quite pure, are colorless; but, as deposited in the urine, they are almost always of some shade of yellow or red; being frequently salmon-colored, like brick-dust, and therefore called *lateritious*, sometimes yellowish, and sometimes, though more rarely, pink. So constant is this association, that the reddish color of the deposit is one of the characteristic signs of the uric acid lithiasis. The color is owing to certain organic coloring principles in the urine.

The urine during the existence of the complaint is usually high-colored, and more or less reduced in quantity. Often it is very scanty. Its density does not upon the whole vary much from that of health. When first passed, the urine is often clear; and sometimes the deposition takes place after cooling, without much, if at all, disturbing its transparency. But generally it becomes turbid on standing, and not unfrequently, when heavily loaded, comes away more or less turbid from the bladder. The deposit sometimes, though rarely, consists exclusively of crystalline sand. More generally this is mixed with a large propor-

tion of amorphous impalpable matter; and now and then small concretions of the size of a pin's head or larger may be observed.

Now whatever produces an excess of uric acid in the circulation, or occasions the secretion by the kidneys of another acid when the urine is saturated with uric acid or urate of ammonia, or neutralizes any alkali which might otherwise be secreted by the kidneys and render the uric acid more soluble by combining with it, may serve as the cause of an attack of this variety of gravel. Whatever materially diminishes the quantity of urine may have the same effect, by rendering the solution too concentrated. Hence the frequent association of scanty and high-colored urine with the disposition to deposit uric acid or the urates. Among the causes which act most powerfully in producing an excess of uric acid is the use of much high-seasoned animal food, conjoined with indulgence in wine or other alcoholic drink, and at the same time with habits of indolence.

But there is also not unfrequently a strong constitutional tendency to the disease, which occasions it to appear in certain individuals from causes which have no effect on others; so strong, indeed, in some instances, that the complaint appears, notwithstanding the most studious care to shun its exciting causes.

Fevers of a sthenic character, and inflammations so severe as to produce fever, are frequently attended with a scanty, high-colored urine, which, as the complaint passes off, is apt to deposit a copious lateritious sediment. This may readily become the origin of an attack of gravel; and the complaint does in fact frequently originate in a febrile condition of the system. Acute inflammation or high vascular irritation of the kidneys, and of the urinary passages, is peculiarly apt to induce scantiness of urine, and to develop gravel in those predisposed to it.

Age appears to have some influence in this affection. Thus it has been noticed to be most common in infancy, and on the commencement of the decline of life. In the former case, it has been ascribed to an exclusive diet of

milk; in the latter, to a diminution of bodily exercise, without a corresponding reduction in the indulgences of the table.

The disease is also more prevalent in certain districts of country than in others. This may be owing partly to differences in the habits and diet of the population, partly to differences in the character of the climate; damp places, and those much exposed to vicissitudes of weather, being considered most liable to renal affections.

Exposure to cold, and injury to the kidneys from external violence, sometimes act as exciting causes of uric acid gravel. They may produce the effect by giving rise to irritation or inflammation of the urinary organs, and consequently to a scanty and highly-charged urine; while cold probably operates additionally by checking cutaneous exhalation, and thus directing to the kidneys acid matter which usually escapes by the skin.

The prognosis in this form of lithiasis is generally favorable. It may almost always be relieved when merely in the form of gravel; though, if the original predisposition has been strong, it may not be possible to prevent occasional returns of the complaint.

PHOSPHATIC LITHIASIS.

This is much less frequent than the preceding variety of gravel. The salts of which the deposit consists are the double phosphate of magnesia and ammonia, and the phosphate of lime, either separate or mingled. Unmixed phosphate of lime is rare; the double sort is less so; but the two together are most frequent. These salts are very insoluble, but in healthy urine are held in solution by an excess of acid. They appear in the sediment sometimes in the form of white, shining, crystalline grains, which are, however, almost always mixed with a much larger proportion of a whitish or grayish amorphous impalpable powder; and the latter is often present alone. The phosphatic deposit is distinguished by its white color, its insolubility in solution of potassa, and its ready solubility in dilute muriatic and acetic acids. In the early stages, it is some-

times attended with a yellowish sediment of urate of ammonia; but this diminishes if the complaint continues, and in the advanced stages almost disappears.

The urine is usually more copious than in health, and of a pale color when passed. It is sometimes clear at first, at other times turbid; and, in the former case, lets fall a sediment upon cooling, and sometimes also upon being heated to the boiling point, probably on account of the escape of carbonic acid. From this latter property it might be mistaken for albuminous urine; but it may be readily distinguished by the solubility of the coagulum in an excess of nitric acid. Another characteristic is the frequent appearance of a pellicle on the surface of the urine when it has been allowed to stand for some time. This pellicle is gradually deposited. Phosphatic urine frequently presents beautifully crystalline forms under microscopic examination. In the beginning the urine is sometimes feebly acid, but more frequently neutral; in the end, it is always alkaline.

The causes of the phosphatic sediment are such as produce an excess of the salts, or an alkaline state of the urine. The phosphates being held in solution in the urine by an excess of acid, are of course deposited when the acid is neutralized or an alkali predominates. It has been observed that a disposition to an over-production of the phosphates is apt to accompany a nervous and irritable condition of system, marked by general debility, paleness of complexion, impaired digestion, and a frequent, irritated, easily-excitable pulse. The dyspeptic symptoms are sometimes very prominent, with irregular bowels, and deranged hepatic secretion. There is often uneasiness, seldom amounting to pain, in the lumbar region. This condition is found among the poor, as a consequence of unwholesome food, exposure to cold and privation, and wretchedness of all kinds. It occurs also in those whose systems have been worn out by profligate habits, or by over-exertion whether bodily or mental. In its worst forms, there is often loss of appetite, a listless state both of mind and

body, peevishness or acerbity of temper, general debility, emaciation, and a sunken haggard appearance of the face. It is often associated with chronic organic affections of the urinary organs, uterus, rectum, or spinal marrow.

Injuries of the kidneys, bladder, etc., from local violence of various kinds, occasionally precede the development of phosphatic lithiasis. Whatever induces chronic inflammation of the urinary organs disposes to the affection. The diseased mucus which results, appears, by an influence analogous to that of ferment, to induce putrefaction in the urine while still in the bladder. The alkaline condition thus produced strongly favors the deposition of the phosphates, which often form an abundant sediment under these circumstances.

Occasionally, grief or other depressive emotion, exhausting mental application, or debilitating excesses, induce an attack of the disease, which subsides upon the removal of the cause. But too frequently the prognosis is unfavorable, in consequence of the organic mischief which lies at the foundation of the urinary disorder. The worst cases are said to be those in which the phosphate of lime alone is deposited, as this is apt to be associated with organic disease of the bladder. Much advantage, however, may be expected from treatment in cases which do not depend upon incurable structural lesions.

OXALIC LITHIASIS.

This does not usually engage the notice of the physician until symptoms of calculus in the kidney or bladder are presented. The urine is in general tolerably clear, or exhibits only a slight sediment on cooling. In some instances, deposits of oxalate of lime are said to have been noticed, bearing some resemblance to the phosphates in appearance, but they are rare. Upon the whole, it is the absence of sediment, in connection with the internal symptoms of calculus, that excites suspicion of the existence of this affection. The suspicion is confirmed when crystalline or amorphous concretions, found in the urine, prove upon

trial to be insoluble in acetic acid, and solution of potassa, soluble in dilute nitric acid, and very slightly so in dilute muriatic acid.

Little is known of the cause of oxalic lithiasis. The system is not obviously much deranged before the attack. It is highly probable that the use of sorrel, and of the foot-stalks of rhubarb leaves, as articles of diet, favors the production of oxalate of lime deposits, as both of these vegetables contain oxalic acid combined in excess with potassa. It is probable also that, when a predisposition exists, the free use of sugar may tend to give it effect. The complaint sometimes occurs in infancy, is most common between the ages of fifteen and fifty, and is rare in advanced life.

Effects of Morbid Urinary Deposits.—These differ according to the character of the deposit, and the portion of the urinary organs upon which it acts. It has been before stated that, in the form of impalpable powder, the sediment produces no material effect in its passage. In the form of sand it often excites very considerable irritation throughout the urinary passages, from the pelvis of the kidney where it is deposited, to the termination of the urethra. In that of calculus, it gives rise to peculiar phenomena in the several positions which it may occupy, as the kidneys, the ureter, and the bladder. It will be most convenient to treat of these two forms distinctly.

The commencement of an attack of gravel, in which the sediment is in the form of sand, so fine that no mechanical impediment is offered to its passage, is frequently marked with febrile symptoms, either as a part of that condition of system which leads to the deposition, or as a consequence of the irritation of the kidney produced by the deposited matter. There is an excited pulse, furred tongue, headache or vertigo, heat of skin, heaviness, and general discomfort, with not unfrequently more or less pain in the back, which is, however, dull and aching rather than acute. After these symptoms have continued for a day or two, a discharge of sandy matter takes place with the urine, preceded by scalding or cutting pains in the course of the ureter, and at the

neck of the bladder, and itching or painful sensations at the outlet of the urethra, with frequent and urgent desires to make water, and a good deal of straining in the effort. These sensations are much modified in different cases, in some rising to the most violent strangury, in others scarcely exceeding a moderate burning, with a little uneasiness along the passages. After a short time, the symptoms become milder or cease for a time, to return in renewed paroxysms, until at length the morbid tendency of the system seems to give way, and the patient is restored to health; or the affection assumes a chronic form, and runs on for a long time, perhaps indefinitely, with irregular alternations of remission and exacerbation.

When concretions form so large as to come under the designation of calculi, the effects are much more serious. They are different, according as the calculus is in the kidney, ureter, or bladder.

Calculi are almost always formed originally in the kidney, and are passed through the ureters into the bladder; but sometimes they remain in the kidney, and occasion very great disturbance in that organ.

When the calculus enters the ureter, it produces a double injury; first, by its rough surface or sharp angles, wounding the mucous membrane; and, secondly, by its magnitude, distending the coats of the tube, and thus inducing excessive irritation. The pain which attends its passage is sometimes excruciating, and perhaps equals any to which the human frame is liable. It is usually more or less paroxysmal, and has therefore been called *nephritic colic*. The affection has been already sufficiently described under the title of *nephralgia*, to which the reader is referred. After a variable duration of the severest suffering, the patient is often suddenly relieved by the escape of the calculus into the bladder, and it is said that the relief is sometimes preceded by a paroxysm of unusual intensity, in consequence of the greater sensibility of the extremity of the duct. In some instances, the calculus is detained in the ureter, either producing complete obstruction, and consequent accumulation of urine, with distention, ulceration or rupture, or renal ischuria, or

so arranging itself in the end as to allow the urine to flow past it, and thus producing directly no other mischief than inflammation in its immediate neighborhood. In relation to the effects produced by the different kinds of calculi in the ureter, it is probable that the oxalate of lime concretions produce the severest pain, from their roughness and hardness, and the phosphatic the least, because less generally crystallized. The latter, however, are comparatively rare, as the phosphates are little disposed to form original concretions, and are generally produced by deposition about a nucleus. The uric acid concretions are greatly more numerous than both the others together. The character of the calculus may be conjectured from that of the urine. If uric acid or the urates are copiously deposited, the concretion may be supposed to be of the same nature; and so also of the phosphates; while the absence of all deposit, or the presence of oxalic acid in any state in the urine, especially if the nephralgic paroxysms are unusually severe, would lead to the suspicion that the offending cause might be the oxalate of lime.

In the *bladder*, a small calculus does not necessarily occasion much uneasiness. The immediate relief experienced upon its escape from the urethra is so great that the patient is scarcely sufficiently upon his guard against the ultimate consequences. Generally, however, its presence is indicated by a disposition to frequent micturition, an occasional sudden stoppage of the stream of urine, painful spasmodic contractions of the bladder, the discharge of blood from the urethra, and itching and painful sensations in the glans penis, which lead, especially in children, to a frequent pulling and great elongation of the prepuce. These symptoms are gradually increased. The disposition to pass water becomes at length extremely urgent and almost incessant, and the spasms of the bladder exquisitely painful. The least jar occasions severe suffering, so that riding in a rough vehicle becomes almost impossible. Vesical mucus is discharged in great quantities, the urine becomes offensive, and copious depositions of the phosphates often take place. The general health at length gives way. Hectic fever ensues, with great

debility and emaciation; and at last death from inflammation and disorganization of the bladder relieves the patient. These symptoms, however, though strongly characteristic, should not be exclusively relied on in forming a diagnosis. Sounding is the only infallible method of determining the existence of stone in the bladder. Sometimes the stone is encysted; and then the symptoms are much more obscure. It is chiefly important to know that calculus in the bladder exists, in order not to confound it with other complaints; and to be aware of its composition, in order to the administration of suitable palliative remedies. The latter knowledge is to be obtained exclusively by the examination of the urine and the matters discharged with it.

Treatment of Lithiasis.—The means of relieving the effects produced upon the kidney, ureters, and bladder by calculus depositions are treated of elsewhere. (See the articles NEPHRITIS, NEPHRALGIA, and CYSTITIS.) The measures which require attention here are those calculated to prevent the deposition from taking place within the body, and to remove the deposited matter. As the mode of treatment is influenced by the character of the calculous matter, it will be proper to give separately the treatment adapted to the three prominent forms of lithiasis already described.

In the *uric acid* variety, the indications are, 1. To render the uric acid more soluble in the urine; 2. To increase the solvent power of the urine itself; 3. To correct the constitutional tendency to excess in the production of uric acid, or of any other acid which may have the property of precipitating it from its solution; and, 4. To remove from the body any calculus which may have been already deposited.

To render the uric acid more soluble, recourse must be had to the alkalies or alkaline earths. These are, indeed, by far the most efficient remedies in this variety of lithiasis. The bicarbonate of soda or of potassa should be preferred, as less liable than the caustic alkalies, or even their carbonates, to injure the stomach and impair digestion. Either of these bicarbonates may be given for a long time without injury. I have always employed the bicarbonate of soda, and seldom found it to fail in correcting, for the time, a ten-

dency to the deposition of uric acid or the urates. It is less unpleasant than the corresponding salt of potassa, and probably not less efficacious. By rendering the urine alkaline, these salts enable it to hold the uric acid in solution. They have the additional advantage of increasing the secretion of urine, and thus meeting the second indication. It is obvious that they do not correct the excessive production of the acid; but they afford relief to the symptoms, and prevent injurious results, while other means are employed for effecting a radical cure. When the cause of the excess of uric acid is temporary, it often happens that no other remedies are necessary. The bicarbonates have still another advantage, that they are capable of dissolving the phosphates as well as uric acid, and consequently do not occasion the deposition of these salts, as the carbonates and caustic alkalies are accused of doing. They should be used freely, and dissolved in a large quantity of liquid. The best solvent for them is carbonic acid water, as it is usually very acceptable to the stomach, and at the same time supplies any deficiency of carbonic acid which may exist in the salt. Half a drachm of bicarbonate of soda may be given, dissolved in from four to eight fluidounces of carbonic acid water, with or without ginger syrup, four times a day. It should be continued until the urine ceases to yield any sediment on cooling, passes freely, and recovers its natural color; and, if omitted, should be resumed immediately upon the recurrence of the symptoms. The natural mineral waters which have been found most useful in calculous complaints are those containing bicarbonate of soda. The red sulphur water in Macon county, in this State, has deservedly obtained a high reputation for the relief of gravel, as well as other diseases of the urinary organs. Solution of potassa, the alkaline carbonates, magnesia, lime-water, and soap, have all been employed to meet the same indication, and all, to a certain extent, with the same effect. There might be circumstances under which one of these antacids would be preferable, as lime-water, for example, in cases of chronic nausea and vomiting; but, as a general rule, they are inferior to the bicarbonates.

To meet the second indication, that, namely, of increasing the solvent power of the urine, means must be employed to increase its quantity. Hence, the patient should drink freely of cool diluent liquids, such as gum-arabic water, flaxseed tea, and the infusion of slippery-elm, sassafras pith, and benne leaves. Carbonic acid water is sometimes a useful beverage in these cases. Benefit will now and then accrue from adding some diuretic substance to the drink, especially in chronic cases in which moderate stimulation may not be objectionable. Such additions are the oil of juniper, wild carrot, and the spirit of nitric ether. It has been stated that the alkaline bicarbonates serve also to fulfil this as well as the first indication.

In order to correct the tendency to an excessive production of uric acid, we must remove its causes. The patient, therefore, should be restricted to a vegetable diet in the acute form of the complaint; and even in chronic cases should employ animal food with great moderation. Alcoholic drinks should be forbidden. To prevent the generation or accumulation of any other acid in the system which may tend to precipitate the uric acid, all acescent articles of food must be avoided, and all substances of difficult digestion, which may favor the production of acid in the stomach by diminishing its solvent powers. The alkalies also meet this indication by neutralizing any excess of acid produced. Other means calculated to prevent accumulation of acid in the circulation, are such as excite the skin or the bowels to increased action, and throw off the acid through these emunctories. In the febrile state, the neutral cathartic salts may be used as purgatives, and the citrate of potassa and acetate or citrate of ammonia as diaphoretics. The latter salts are best given in the state of effervescence. In the absence of fever, combinations of opium with ipecacuanha or tartar emetic will be useful, especially at bed-time. Recourse may also be had to the warm-bath. Flannel should always be worn next the skin. Moderate exercise is of great advantage, both by enabling the system to appropriate the food admitted into it, without the necessity of throwing off the excess in the form of urea

or uric acid, and by sustaining the eliminating function of the skin.

The fourth indication is to be fulfilled by means directed to the solution, disintegration, or mechanical expulsion of the calculus. These are to be resorted to whether the calculus is in the kidney or the bladder. To effect its solution, no means are so efficacious as a very free and long-continued use of the alkaline bicarbonates. The urine should be brought into the alkaline state by these salts, and kept so for months if necessary. Instances are recorded in which there is good reason to think that even stones in the bladder have been completely removed in this way. Renal calculi are supposed to have been sometimes disintegrated, and thus rendered capable of expulsion, by the use of stimulating diuretics, such as the oil of turpentine, copaiba, and cantharides. It is certain that sometimes, after the free use of these substances, large quantities of calculous matter have been discharged with the urine, to the great relief of previous uneasiness in the lumbar regions, and other morbid symptoms.

Of the measures calculated to facilitate the passage of the calculus into the bladder, sufficient has been said elsewhere. (*See* NEPHRALGIA.) After it has reached the bladder, means should be immediately employed for its expulsion, if it does not pass out spontaneously. This is of the utmost importance; as it is by such precaution that the formation of stone in the bladder is to be prevented. When, therefore, there is good reason to believe that a calculus has escaped from the ureter, the patient should be directed to retain his urine as long as he conveniently can, drinking in the meantime freely of water or mucilaginous fluid, and, when the bladder is quite full, to bend his body forward so as to make the entrance of the urethra the most dependent part, and then to discharge his urine in a full stream. The urine should be carefully examined to ascertain whether a calculus has passed. If not, the above process should be repeated time after time. Sir B. Brodie recommends that, previously to the discharge of the urine, a large bougie should be introduced into the bladder, and

withdrawn at the moment of the effort of micturition. The calculus sometimes follows the bougie immediately. During the employment of these methods, the attempts to dissolve or at least prevent the increase of the calculus should be made by the free use of the alkaline bicarbonates. Should the calculus become lodged in the urethra, the aid of the surgeon will be necessary. Should none be discharged, and yet all symptoms of its presence in the bladder cease, there will be good reasons for supposing that it may have been dissolved; and in the course of two or three weeks the efforts for its solution or expulsion may be omitted.

It has been already said, that persevering efforts should be made to effect the solution of stone in the bladder by the internal use of the alkaline bicarbonates. Should this object not be obtained, and when the stone is of any considerable size, success is hardly to be expected; still much good may possibly be done by preventing further deposition, and thus obviating the increase of bulk and the roughness of the surface.

Quite a remarkable case came under my own observation, in which the patient, Mr. James B. Conly, of this city, had been sounded, and a stone ascertained to exist, and yet, by the use of the following formula, the stone became disintegrated, and passed off in the form of fine sand, with an occasional gravel as large as a wheat grain. As this compound seems to act principally by decomposing the mucus by which the particles of the stone are held together, it will probably be applicable to all varieties of gravel.

Formula.—Fill a vessel with white-sumach berries, and then pour on as much good apple vinegar as it will contain; let it stand in a warm place twenty-four hours; strain, and add half an ounce of sulphuric acid to a quart. Dose, half a wineglassful three times a day.

Mr. Conly informs me that many others have been relieved by this means, who took it at his suggestion.

In the *phosphatic* variety of lithiasis, the most important indications are: 1. To prevent the production of an excess of the phosphates; and, 2. To prevent their deposition.

Their production in excess being associated with dyspepsia, general debility, and nervous disorder, it is important to obviate these several conditions by tonics, attention to the state of the bowels and the hepatic secretion, a proper regulation of diet and exercise, and a judicious use of narcotics. The whole treatment applicable to dyspepsia may be employed. (*See* DYSPEPSIA.) In relation, however, to exercise, care must be taken, if a calculus already exists within the body, that it be not too violent. Opium is admitted by all to be an invaluable remedy in this variety of lithiasis. It not only quiets the irritation of the urinary organs, and the general irritation of the nervous system, and thus greatly increases the comfort of the patient; but it controls also the secretion of urine, which it tends to keep in the proper state both as to quantity and quality. Thus it is asserted that no means are more efficacious in maintaining the healthy acidity of urine than opium. The patient should be kept under its moderate influence during the paroxysms of the disease. The dose may be from half a grain to a grain, two, three, or four times a day. When opium disagrees with the patient in all its forms, some other narcotic, as camphor, hyoscyamus, conium, or dulcamara may be resorted to.

The deposition of the phosphates would be best prevented by rendering the urine acid. Either the sulphuric, nitric, muriatic, or nitromuriatic acid may be employed. The last would be peculiarly appropriate in cases of disordered hepatic secretion. Some of the vegetable acids appear to have done good occasionally in lithiasis. Thus cures are asserted to have been frequently produced by the use of hard-cider. At least, this remedy is worthy of being tried in the phosphatic variety of the disease.

But it appears to be now generally admitted, contrary to former opinion, that the alkaline bicarbonates are the most efficient medicines in preventing the deposition, and effecting the solution of the phosphatic as well as the uric acid sediments. It is only the bicarbonates, however, that have this effect. The carbonates and pure alkalies increase the deposition.

No advantage accrues in this affection from an increase of the secretion of urine. It is indeed frequently too copious, and sometimes requires repression; yet the gravel weed, (eupatorium purpuriam,) though a diuretic, may often be used with great advantage. I have known several cases in which the use of tea made of the root of this herb has been followed by a free discharge of sandy material, and a speedy subsidence of all the symptoms of gravel. As the disease is often associated with chronic inflammation of the mucous membrane of the kidneys and bladder, and sometimes probably owes its obstinacy to this cause, remedies are occasionally found useful which produce an alterative impression upon these organs. Hence the turpentines or their volatile oil, copaiba, uva ursi, pareira brava, etc., may sometimes be advantageously administered. By correcting the secretion of mucus, they obviate the cause of the alkalinity of the urine, and consequently the deposition of the phosphates. It is hardly necessary to observe that the patient, in this as in the preceding variety of lithiasis, should be clothed in flannel. He should especially avoid the use of hard water as drink. Both the sulphate and carbonate of lime, often contained in such water, probably dispose to the phosphatic sediments. Stone in the bladder is peculiarly abundant in limestone regions.

The remarks made in relation to the treatment of stone in the bladder in the uric acid variety of the complaint, are also applicable here, and need not be repeated.

In the treatment of the *oxalic lithiasis*, we must be guided by the general condition of the system. Sometimes it may require a moderate antiphlogistic treatment, sometimes the reverse. Dr. Prout recommends mineral acids, combined with other tonics, in order to change the diathesis to that in which the disposition is to deposit uric acid. But as soon as any tendency to the latter sediment is observed in the urine, the treatment should be suspended. As tonics, Dr. Bird recommends sulphate of zinc, and, in anemic cases, the chalybeates. The shower-bath is also useful. The same author is favorably disposed to the use of colchicum. All articles of diet containing oxalic acid, or readily converted

into it, should be forbidden. The patient should, therefore, avoid sorrel, as a salad, should never eat rhubarb pies, and should partake very moderately of sugar. Indigestible substances generally should be excluded from the diet, and none of the fermented liquors allowed. Dr. Bird considers a very small quantity of brandy and water at meals as the best beverage. Flannel should be worn next the skin. Little or nothing can be done by remedies to dissolve the oxalate of lime when deposited. So far as regards mechanical measures for expulsion, the same rules are applicable as to the uric acid calculi.

RETENTION OF URINE.

When urine is secreted, but not evacuated, it is said to be retained, and the affection is denominated retention of urine. This may occur in the kidneys or in the bladder.

RENAL RETENTION.

This is not always easily distinguishable from suppression of urine, in which the secretory function is suspended or abolished. In both, the discharge of the urine either greatly diminishes, or entirely ceases; and in both the signs which indicate fulness or distention of the bladder are wanting, and little or no urine escapes upon the introduction of a catheter. In retention, however, there is much more pain than in suppression. There is, also, in the former a distressing sense of weight, or distention, in the lumbar region; great uneasiness is produced by strong pressure in the loins; and it is asserted that the ureters and kidneys have sometimes been so much distended as to form a fluctuating tumor, discoverable from without. Besides, the retention is seldom complete. Occasionally there may be a considerable discharge of urine, consequent upon a partial removal of the obstruction; and, if no urine pass the obstructed point, still a portion may enter the bladder from the opposite kidney, and escape by the urethra. In suppression, there is either no discharge, or the quantity is very small, and liable to little diversity.

The consequences of renal retention, unless the obstruc-

tion be speedily removed, are very serious. If the obstruction exist in the upper part of the ureter, the pelvis of the kidney, and even the kidney itself, become greatly distended; and the renal structure has sometimes been so much stretched out as to form a sort of membranous bag. When the lower part of the ureter is closed, this tube becomes also vastly dilated above the point of obstruction. In some instances, there is reason to believe that suppression is induced in consequence of the pressure upon the secreting vessels, and death speedily results from this cause. In other cases, inflammation, suppuration, and complete disorganization of the kidney take place, with rupture, and all the fatal consequences of effused pus and urine.

The most frequent causes of renal retention are calculi in the ureter, or at its origin in the pelvis of the kidney. Coagula of blood or fibrin may produce the same effect. Obstruction of the passage may also arise from inflammatory thickening of the coats of the ureter, or the pressure upon it of tumors from without.

VESICAL RETENTION.

Retention of urine in the bladder is, in general, very easily distinguished. The occurrence of inability to make water leads to an examination of the bladder, which is felt above the pubis, forming a roundish, well-defined, and sometimes visible tumor. Occasionally, however, in very fat persons, or in tympanic states of the abdomen, it cannot be easily distinguished by the touch. In this case, the dulness upon percussion over the whole region which it occupies, contrasting with the resonance of the surrounding space, will be sufficiently diagnostic. A complication of ascites with retention might cause some embarrassment; but the peculiar pain produced by pressure on the distended bladder, or, if this fail, the introduction of a finger into the rectum, or of a catheter into the bladder, will soon decide the question. The distention goes on increasing with the continuance of the retention; and the bladder sometimes acquires enormous dimensions, reaching to the umbilicus, or even, in some rare instances, as high as the pit of the

stomach. It has, under these circumstances, been mistaken for ascites.

There are two conditions of retention, which materially differ in their symptoms: one, in which the affection is suddenly induced; the other, in which it comes on gradually. In the former there is usually much pain in the hypogastrium and perineum, with a constant and distressing desire to pass water, but ineffectual, notwithstanding the storngest efforts. The pain is much increased by pressure over the pubes. If the affection continues, the patient becomes feverish, restless, anxious, and exceedingly distressed, until at length a portion of the bladder or urethra gives way, and the urine escapes either into the peritoneum, with inevitably fatal results, or, more frequently, into the neighboring cellular tissue, producing inflammation, sloughing, and generally death. When the retention is partial, and the accumulation in the bladder gradual, this viscus accommodates itself in some measure to the pressure, and may be greatly distended without much uneasiness. The ureters, and even the pelvis of the kidney, sometimes participate in the distention. Sooner or later, however, unless relieved, the same symptoms are apt to come on as in the acute form, and with the same fatal result.

The causes of vesical retention are twofold; namely, obstruction of the urethra, and a loss or diminution of the contractile power of the bladder. Obstruction may arise from inflammatory swelling of the mucous membrane and cellular tissue at the entrance of the urethra; and, in this case, the symptoms of irritable or inflamed bladder are added to those properly belonging to the retention. It may also arise from spasmodic contraction of the sphincter fibres, under the influence of cold, direct irritation, inflammation, or nervous disorder, especially hysteria. Other causes of obstruction are a pendulous tumor falling upon the entrance of the urethra, tumors of the uterus or vagina, the gravid uterus pressing on the neck of the bladder, and more frequently still, especially in old people, enlargement of the prostate. But the most frequent obstruction of all is that from stricture of the urethra. Diminished contractility of

the muscular coat may arise from the debility of old age, the deficient innervation of low fevers, and cerebral or spinal disease, attended with paralysis. In these cases, the retention is not complete. When the bladder is to a certain degree distended, even though it may have lost all muscular power, its elasticity is sufficient to overcome the feeble resistance of the sphincter, and a portion of the urine escapes, in general involuntarily. This happens especially at night; and there is some danger of mistaking the affection for incontinence, unless the practitioner is on his guard. In states of system in which the patient is insensible, as in typhoid fevers, there is peculiar liability to this mistake, which may lead to serious consequences. This state of the bladder is often very annoying. All voluntary power of evacuation is lost, but with every movement which causes gravity to favor the discharge of the urine, and with every unusual degree of pressure on the bladder, as in coughing or sneezing, a portion of the urine escapes involuntarily, producing irritation, and even excoriation of the skin with which it comes in contact, and an excessively disagreeable odor about the person. Such cases are a combination of retention and incontinence. The very act of distention has the effect of debilitating the muscular coat, and, in the end, if continued, of entirely destroying its contractile power. Hence the habit of resisting the desire to evacuate the urine may, if long enough continued, gradually induce retention.

Treatment.—Renal retention, if consequent upon inflammation, must be treated by means adapted to the cure of nephritis; if upon calculi or coagula in the ureter, by those which are recommended under lithiasis and nephralgia. In vesical retention, when proceeding from inflammation at the neck of the bladder, bleeding, leeching, saline cathartics, antimonials, emollient cataplasms, and the warm bath, are suitable remedies, and will seldom fail. To attempt to relieve the complaint with the catheter would, in general, only aggravate the irritation. This instrument should be resorted to in this and the following case only when rendered absolutely necessary, in order to relieve very painful or dangerous distention. When spasm is the cause of retention, an

anodyne enema will be the most effectual remedy. Tobacco or lobelia cataplasms to the perineum may also prove useful. In these cases, too, the tincture of chloride of iron, and the alcoholic solution of ammoniated iron, have been recommended. Should the spasm be hysterical, or should the incontinence depend upon hysteria in any other way, the remedies applicable to this protean disease must be employed, and especially cups or leeches, with subsequent blistering or pustulation over the spine. But care should be taken, in such cases, not hastily to resort to the catheter; for if once used it is again and again called for, and becomes at length a necessary source of relief. When the obstruction is purely mechanical, as from stricture of the urethra, enlarged prostate, etc., the catheter becomes indispensable; and if this cannot be introduced, the bladder must be punctured. Such cases, however, belong to the surgeon.

Retention arising from deficient power in the muscular coat must be treated according to the circumstances in which this loss of power originated. If the seat of disease is in the spine, cups, blisters, antimonial pustulation, and setons or issues to the back, are appropriate remedies. If the paralysis of the bladder is only a part of a general affection, dependent on disease of the brain, it must be treated accordingly. If quite local, or connected with general debility, it is to be encountered by tonic treatment addressed to the system, and stimulants to the bladder itself. The cold bath, and the cold douche to the perineum and pubes, are sometimes useful by rousing a salutary reäction. Quinine, tincture of chloride of iron, uva ursi, buchu, cubebs, oil of turpentine, and cantharides, have all been recommended, and may be tried successively, or variously combined. Aloetic laxatives should be preferred in order to keep the bowels regular, unless the patient should be troubled with piles. Repeated blistering to the sacrum will occasionally prove useful, and electricity may be tried with the hope of benefit. In these cases, the use of the catheter is important in order to prevent distention of the bladder, which has the effect of increasing its debility. It should be introduced at least twice a day, and if more frequently

used, so much the better. After recovery, the patient should be scrupulously careful to obey the calls to pass water in due time, lest accumulation should take place and produce distention.

INCONTINENCE OF URINE.

In this affection, there is a want of power to control the discharge of urine, which is evacuated involuntarily. There are two very different conditions of the urinary organs, both of which are attended with incontinence. In one, the bladder is so highly irritated that the sphincter, though in a healthy state, cannot resist the urgent desire of micturition; in the other, the sphincter is debilitated or palsied, and is unable to obey the will in resisting the ordinary action of the bladder. In the former, the bladder may be inflamed or highly irritated, so as to be unable to tolerate the presence of healthy urine; or the urine may be morbidly acrid, so as unduly to excite the bladder, though this may have been previously in a normal condition. This sort of incontinence also frequently accompanies stone in the bladder.

But it is the second condition which constitutes true incontinence. In this, the sphincter either relaxes under less than the ordinary stimulation from the urine, or is quite destitute of the power of contraction, so that no other impediment exists to the escape of urine than the pressure of the soft parts upon the channel of the urethra, a resistance which the slightest force is sufficient to overcome.

Not unfrequently both these conditions exist in the same case—the bladder being irritated to more than its ordinary contraction, while the sphincter has less than the ordinary power of resistance.

Under the influence of sudden emotion, especially of fear involuntary discharges of urine sometimes take place. These can be considered as morbid only when they occur habitually, or from comparatively slight causes.

The most frequent form of incontinence is that in which the sphincter retains considerable contractile power, but yields habitually to slight impulses when the will is not sufficiently on its guard, or when it is to a considerable

degree inoperative, as in sleep. Involuntary discharge of urine at night is a frequent and very disagreeable affection. It is most common in children before puberty, and is apt to cease spontaneously after this period, but is sometimes prolonged into adult age. Though in itself of little importance to the health, it often becomes highly important in its moral influences, sometimes affecting the character and whole future life of the patient. The discharge during sleep frequently occurs in consequence of dreams; but often also it is altogether involuntary, without the least consciousness on the part of the patient, and dependent solely upon the relaxation of the sphincter under the stimulus of the urine. It is said that the position of the patient has some effect, and that he is more apt to make water when lying on the back than upon the face or side. I have, however, some doubts of the accuracy of this statement. Occasionally the incontinence is experienced also during the day, so that the patient cannot retain his urine so long as persons in ordinary health. This affection is often attended with an acrid condition of the urine, which is high-colored, and loaded with uric acid in solution, or even with sediments of the acid or its salts. In this case, there is a combination of irritation of bladder with debility of the sphincter. More frequently, however, the kidneys seem to participate in the debility of the sphincter, and a pale watery urine is secreted in unusual quantity. The affection appears to be hereditary, or at least occurs frequently in several members of the same family.

A variety of incontinence analogous to the above occasionally arises from irregular nervous action, especially in hysterical cases. There is in these cases less a positive debility of the sphincter than an irregularity of innervation, which is as often excessive as deficient.

But the most deplorable cases of incontinence are those which are connected with complete paralysis of the sphincter, or a total loss of power in the muscular fibres thus denominated, in consequence of mechanical injury, as from the operation of lithotomy in females, and from severe labors. The paralysis of the sphincter may not extend to the mus-

cular coat of the bladder generally, in which case the urine will be occasionally discharged in a jet, when from position or other cause it has accumulated considerably; or the bladder may share the same loss of power, and then incontinence may become involved with retention; the bladder being frequently full or distended, while the urine dribbles away whenever the elasticity of the coats is sufficient to overcome the slight resistance of the urethra, or gravity favors the discharge. This condition of things is most common in the old, and is sometimes associated with disease of the prostate. The disease, like retention from a similar cause, may be quite local, or may be associated with paralysis of other parts from disease of the brain or spinal marrow.

Treatment.—The variety of incontinence connected with an irritated state of the bladder, or an acrid condition of the urine, must be corrected by removing its cause. The proper remedies will be found under the heads of *irritable bladder, cystitis, nephritis, and lithiasis.* An anodyne enema is among the most effectual means of affording present relief. In the cases dependent on debility of the sphincter, such as nocturnal incontinence, the indications are to restore tone to the system at large, if debilitated, and to stimulate the sphincter. The first object is to be accomplished by the bitter tonics, mineral acids, chalybeates, sea-bathing, the cold bath, and due attention to clothing, diet, and exercise. For the latter purpose, astringents or tonics, having a peculiar reference to the urinary organs, may be first tried, such as uva ursi, pipsissewa, and pareira brava; and these may be aided by the cold douche to the sacrum, perineum, or pubes. Should these fail, recourse may be had to the more active urinary stimulants, as buchu, cubebs, oil of turpentine, or cantharides. On the whole, I have found no one remedy so effectual as cantharides, pushed so far as to produce slight irritation of the urinary passages. I was once consulted in the case of an interesting little girl of eight or nine years of age, who had never been able to retain her urine from birth. Chalybeates and the tincture of cantharides completely cured her in less than a month. In bad cases, blisters to the sacrum may be employed. The

patient himself should be induced to aid the efforts of the practitioner. Much may be done by firm resolution on his part. Yet a resort to chastisement, recommended by some writers, in cases in which the will is not concerned, is not only cruel, but nugatory, as the fears excited have of themselves a relaxing effect on the sphincter. Little or no drink should be allowed in the latter part of the day or evening; the patient should fully evacuate the bladder before going to sleep; and a good plan is to awaken him for the same purpose late at night, before the period at which he usually wets the bed. Any method which will serve to break the habit will often be found serviceable. When the complaint is connected with hysteria, the peculiar treatment adapted to that affection must be employed.

CHAPTER VI.

FUNCTIONAL DERANGEMENTS CONNECTED WITH THE NERVOUS SYSTEM.

FUNCTIONAL DERANGEMENTS OF THE BRAIN.

Before entering upon the special affections, there is one preliminary consideration which it is necessary to present to the reader. A remarkable fact, familiar to all pathologists, is, that similar phenomena very often proceed from precisely opposite conditions of the brain; so that it is occasionally very difficult to decide from the symptoms alone what is its real pathological state. We find an analogy to this in electricity, which produces the same effects whether it be positive or negative.

NERVOUS IRRITATION.

The brain is peculiarly susceptible to irritation of an essentially nervous character; that is, without necessary participation of the blood-vessels. Too exclusive an importance has, I think, been attached to the state of the circulation in this organ. All the morbid phenomena have been ascribed by some pathologists to too much or too little blood, or to its unequal quality or distribution. These are undoubtedly frequent sources of cerebral disorder; but the brain is also frequently excited into disease without them. The nervous system has a peculiar mode of action of its own, in which, though blood may be necessary as an instrument, it is not the main operating principle. This action is susceptible of exaltation, depression, or depravation in

itself, and from the influence of its own peculiar agents. The fact here stated is not of merely speculative interest; it is in the highest degree practically important; and a vast deal of mischief has been done by looking to the blood-vessels exclusively as the seat or source of cerebral disorder. But, in thus asserting for the nervous functions a capacity of exclusive and independent disease, we must not forget that their irritation frequently in the end involves the blood-vessels; and that the affection, if not relieved, may terminate, though not necessarily, in active congestion or inflammation.

As the offices of the brain are numerous, so also must be the signs of its excessive excitement or irritation. To enumerate all these in the present place would be quite out of the question. Irritation of the brain obeys the general laws of that morbid affection. If moderate, it exalts the healthy functions without otherwise altering them; if stronger, it more or less deranges the functions; in great excess, it entirely changes or abolishes them. Any thing which is capable of making a strong impression on the brain, either through the medium of the intellect or emotions, or through the nerves acting upon other organs, may become a cause of irritation of the brain.

The treatment consists in removing the cause, and in the use of all those means calculated to quiet the nervous system, or to draw off the excitement by revulsion.

VASCULAR IRRITATION, OR ACTIVE CONGESTION.

Among the most common symptoms are a sense of fulness, weight, or distention in the head; giddiness; headache of every grade and variety; increased sensitiveness to sound, with buzzing, roaring, and other perversions of hearing; double, partial, luminous, painful, dim, or otherwise disordered vision, with muscæ volitantes, scintillations, etc.; tingling, formication, neuralgic pains, numbness, and partial or complete loss of sensation in various parts of the body; nausea and vomiting; morbid vigilance, or perhaps more frequently oppression, heaviness, drowsiness, and stupor in various degrees; mental confusion, loss of memory,

and delirium; and finally subsultus, spasm, convulsions, or the opposite condition, indicated by muscular weakness, tremors, and temporary paralysis of motion. It is, of course, understood that all these symptoms are not present in any one case. They are, indeed, often contradictory, and could not exist together. There may be one only, or a few, or there may be many variously grouped.

Active congestion of the brain is sometimes of itself serious, and may prove fatal; but its greatest danger is as the precursor of inflammation of the brain or its membranes, or of apoplectic effusion. Another injurious result, common to this and the preceding variety of cerebral disorder, is the establishment in the brain, under frequently-renewed irritations, of a habit which may lead to the recurrence of the phenomena from slight causes, and even, in some instances, without any apparent exciting cause, as in epilepsy, some forms of hysteria, chronic headache, etc. It is a condition which requires attention, and by the proper management of which, at an early period, much subsequent suffering and danger may be prevented.

Causes.—It is very apt to be the result of the continuance of an irritation primarily purely nervous. But there are certain causes more especially operative, such as direct injury to the head by falls, blows, etc., exposure of the head to intense solar or artificial heat, external cold, alcoholic stimulants, the exciting passions, febrile diseases, translated gouty or rheumatic irritation, suppressed discharges, teething in children, hypertrophy of the left ventricle, and various intestinal and stomachic disorders. The sanguineous temperament, a plethoric state of the circulation, and an over-richness of the blood, may be considered as constituting predispositions to it. Men are probably more subject to it than women. It is common in infancy, at the age of puberty, and from that up to maturity, and again in advanced life.

Diagnosis.—It is sometimes highly important to distinguish active congestion of the brain from passive congestion, depression, or mere nervous irritation. In relation to the two former of these affections, the reader is referred to the

subsequent part of this article. From nervous irritation it is to be distinguished chiefly by the state of the circulation. In active congestion the face is usually flushed, the eyes suffused, and the whole countenance often turgid. If the patient is sensible, he is apt to complain of fulness, distention, or heaviness of the head; and any vertigo or headache which he may have is much increased by stooping, with the head downward.

Treatment.—The treatment in this affection, independently of the measures necessary for the removal of the cause, which should never be neglected, is chiefly depletory, sedative to the circulation, and revulsive. *Local bleeding*, purging, the warm bath, the antimonials when the stomach is not irritable, other saline refrigerants, cold to the head, and hot pediluvia, mustard, blisters, etc., to the extremities, with low diet, rest, and an elevated position of the head, are the principal remedies. Very often, in mild cases, the symptoms may be removed by a saline cathartic and attention to the diet. When serious, however, recourse should always be had to the lancet. The internal use of aconite has been highly recommended. It must be remembered that, though the warm bath may be useful, the hot bath might prove injurious by over-stimulation. But no permanent benefit can be expected while the offending cause remains. This, therefore, should be diligently sought for, and removed or corrected if possible.

DEPRESSION.

In this condition the activity of the brain is diminished either by a directly depressing influence, or the withdrawing of an accustomed stimulus.

The symptoms are chiefly headache, vertigo, disordered vision and hearing, wakefulness, delirium, convulsions, and coma. There is not, as from the moderate influence of the other affections, increased cerebral energy; as indicated by greater acuteness of sensation, more brilliancy of imagination, a more rapid flow of just thought and expression. These can only result from a positive excitement of the brain; but all the other phenomena attending nervous and

vascular irritation may be experienced. It may seem strange that obstinate wakefulness and violent convulsions should be among the effects of cerebral depression; yet few facts in medicine appear to me to be better established. Thus, take away from the brain a stimulus to which it has been long accustomed, and one of the first results is morbid vigilance; and this condition is a not unfrequent attendant on the debility which succeeds exhausting acute diseases. The last vital act of the system, expiring under the loss of blood, is sometimes convulsions. It is well known that all the phenomena of advanced meningeal inflammation, or acute hydrocephalus, are sometimes imitated in children in the lowest stages of exhaustion from bowel affections; and the brain is found apparently healthy after death.

The *causes* of cerebral depression are long-continued or excessive cold; the depressing passions, such as fear and grief; various sedative poisons, as tobacco, digitalis, and hydrocyanic acid; the irrespirable gases, as hydrosulphuric acid, carbonic acid, carburetted hydrogen, etc.; deficiency in the general amount of blood, or in its supply to the brain; an impoverished state of the blood; an excess of carbonaceous matter, and the presence of urea and bilious matter in the blood; the withdrawing of an accustomed stimulus; and, secondarily, any excessive excitement when it ceases. Of course, all the modes of living, the kinds of exposure, the accidents, the diseases which produce any of the above conditions, may act as remote causes of cerebral depression. To enumerate them here would be only to occupy space with what is already familiar to the reader.

Treatment.—Tonics, stimulants, external irritants, and a nutritious diet, with the means necessary to remove the causes of the affection, are indicated in this condition of the brain. In cases at all doubtful, those stimulants should be preferred which have the least permanent impression upon the brain, such as carbonate of ammonia, oil of turpentine, capsicum, musk, and assafœtida; while external stimulation by means of rubefacients, blisters, the hot bath, etc., and the powerful influence of electro-magnetism, should be mainly relied on, when deemed sufficient to meet the exi-

gencies of the case. Should the respiration have been suspended, it should be restored artificially. This is especially important in the cases of poisoning from irrespirable gases. The shock of cold water suddenly dashed upon the surface is sometimes very effective, by rousing the suspended sensibilities of the brain.

MECHANICAL OR PASSIVE CONGESTION.

This results from causes interfering with the return of blood from the cerebral vessels. The blood accumulates in the veins and sinuses; the capacity of the arteries is of course diminished; less arterial blood is admitted than is necessary for the support of the functions; and we have the double result of compression and depression of the brain.

The characteristic symptoms of this condition are a feeling of fulness, weight, and sometimes coldness in the head, an actual diminution of temperature in this part, a strong tendency to drowsiness or stupor, vertigo, faintness, impaired vision, forgetfulness of things or words, dulness of countenance, a livid or purplish hue of the lips and different parts of the face, with paleness, occasionally nausea, and depression in the functions of circulation and respiration.

The causes are ligatures around the neck, tumors pressing upon the venous trunks, gravitation, and such an organic or functional derangement of the heart and lungs, as to impede the passage of the blood either into the right side of the heart, or from the right to the left side through the lungs, and consequently to produce accumulation in the descending cava.

The treatment consists exclusively in the removal of the cause, and, when this is impossible, in the adoption of measures calculated to proportion, as nearly as may be, the calls of the system upon the cerebral centres to their diminished capacity. The avoidance of all kinds of excess, mental or physical, is especially requisite.

HEADACHE, OR CEPHALALGIA.

In the widest acceptation, this may be considered as em-

bracing all kinds of uneasy sensation in the head. Very often it is wholly independent of the brain, being seated in the scalp or cranium. Such is the case with many instances of gouty and rheumatic headache, neuralgia, various inflammatory affections of the exterior coverings of the cranium, or of its sinuses, and syphilitic affections of the periosteum or bony case itself. These do not belong to the complaint as here considered, which is exclusively cerebral.

Headache is of every different degree, and of every conceivable diversity of character. It may be confined to one small spot, in which case it is sometimes called *clavus*, as if it might proceed from a nail driven into the head; it may occupy a particular region of the cranium, as the frontal immediately over one or both eyes, the temporal, the parietal, or the occipital; it may embrace one side of the head, as in *hemicrania;* or it may be diffused, and of indefinite extent. Sometimes it is fixed, sometimes changeable in its position. It may be apparently superficial, or may seem to be felt in the depths of the brain. It is not less various in duration than in the other respects mentioned. It may continue but for an instant, or may last for hours, days, or weeks. Indeed, instances have occurred in which it has never been absent from the patient, during consciousness, for months or years. Much more frequently, however, when so durable, it occurs in paroxysms with intervals of comparative or entire ease, the exacerbations being quite irregular in their recurrence. Not unfrequently, however, headache is regularly periodical, being either remittent or intermittent, and generally of the quotidian or tertian type, though the interval is sometimes longer, and I have known it to occur regularly once in two weeks, without association with any natural periodical function. The pain may be simple, or may be mingled with various other perverted sensations, such as of giddiness, fulness or distention, weight or lightness, emptiness, heat or coldness, hissing, buzzing, ringing, or roaring in the ears, and the sight of dark or luminous spots, scintillations, double vision, half-vision, dimness of vision, and temporary blindness.

Headache may be a result of any one of the pathological

conditions of the brain. It appears to be the favorite sign by which nature makes known any deviation whatever from the normal state of the brain. Viewed in this light, it may be looked on as a safeguard, intended to give notice of disease which might otherwise escape attention, till too late to be remedied; and its indications should never be neglected. We should not be content till it has been traced to its source, however hidden; for it is not the pain only that we are called on to relieve, but often the more serious affection of which it is a mere symptom.

For the sake of convenience, we may consider headache as *symptomatic* when the result of some known disease, and *idiopathic* when the pathological state on which it may depend cannot be ascertained, or is not recognized among special diseases. It is obviously nothing more, strictly speaking, than a symptom in either case.

Symptomatic headache is exceedingly common, and associated with a great number of diseases. It is an almost uniform attendant on different forms of meningeal and cerebral inflammation; and is usually the first sign by which other organic affections of the brain, such as tumors, hydatids, and morbid growths or formations of all kinds, declare themselves. As the direct result of vascular irritation of the brain, it is one of the most common symptoms of all febrile diseases, whether idiopathic or symptomatic. Anæmia and plethora are also affections which frequently occasion headache, though from opposite causes.

Idiopathic headache is also not uncommon. It is usually distinguished by the name of *nervous headache*. It is exceedingly irregular in its modes of attack, duration, and recurrence, as well as in the character of the pain. Sometimes coming on suddenly in a state of apparently sound health, it prostrates at once the mental as well as physical energies of the patient, and, after a longer or shorter period, leaves him as abruptly as it approached, and with all his powers restored. Sometimes it interrupts and prevents sleep; but more frequently the patient, though tormented during the day, will go to sleep at the usual hour, and upon awaking find that the pain has left him for a time. More

frequently than any other variety of headache, this assumes the regular periodical form. In most instances, probably, the pain is in the front of the head, over one or both eyes; but it is occasionally felt in the occiput, and is often diffused without a definite seat. Not unfrequently it occurs in the form of *hemicrania*. It may be dull and grumbling, or heavy and throbbing, or sharp and lancinating like neuralgia. After continuing a certain length of time, it not unfrequently provokes vomiting; but differs from sick-headache in the circumstance, that the matter discharged from the stomach may be quite destitute of acid, bile, or any acrid property. Its duration is entirely uncertain. One attack seldom continues long; but the patient is liable to frequent returns of it, in many instances, for months or years, and in some even for life. It is purely functional, and leaves no traces in the brain after death. The headache itself never proves fatal; but it may, in the end, so far wear out the strength as to render the system less able to support the assaults of other diseases, and may thus contribute to shorten life.

The causes of it are quite obscure. One of the most common is, I believe, the use of coffee, tobacco, and strong tea. Sedentary habits, combined with much mental exertion, and loss of sleep, sometimes give rise to it, independently of any primary disease of stomach. Occasionally I have observed the breath to smell offensive. It has appeared to me that, in many instances, this variety of headache is nothing more than one of the protean forms of nervous rheumatism.

Treatment.—For the treatment of symptomatic headache, the reader is referred to the various diseases of which it is an accompaniment. Under the heads of *sick-headache*, and *neuralgia*, he will find remedies for varieties of the disease in its nervous form. The treatment adapted especially to *hemicrania* is detailed under the last-named affection. It is only for the disease in its idiopathic form that the mode of treatment is here given.

The first and most important point is to discover and remove the cause. In the first place, if the patient is in the

habit of using either strong tea, coffee, or tobacco habitually, he should be advised to try the effect of abandoning it for three or four weeks, by way of experiment. Very often he will find the headache relieved by this simple measure, and then will be sensible of the propriety of abstaining from the poison altogether. Should this measure fail, it will be necessary to seek for some other cause; and if there is any one suspicious article of diet, the same course should be pursued with that as with the substances mentioned. The patient should also sleep sufficiently and regularly, should not overtask his mind or allow himself to be worried and perplexed by business or other cause, and should exercise freely in a pure air. If a citizen, he should be advised to take a journey into the country. A long voyage is occasionally very useful. Sometimes a complete change of life—the substitution, for example, of the business of farming for that of a merchant or professional man in cities—has a most salutary effect. It need scarcely be added that the bowels should be kept regular, and the functions of the stomach, liver, kidneys, skin, and uterus, in a healthy state.

The pain may almost always be temporarily relieved by opiates or other narcotics; and sometimes, when it is very severe, it becomes advisable to have recourse to these remedies; though their habitual use should be most sedulously guarded against. The nervous stimulants or antispasmodics also frequently afford relief. One of the best of these is Hoffmann's anodyne, of which a fluidrachm may be given; but, on the whole, I have found nothing more effectual than two or three cups of strong tea. When the disease depends upon the use of tea or coffee, this remedy acts simply like ardent spirit in relieving the horrors of intemperance. It should, under these circumstances, not be employed, as it aggravates the evil in the end. But in other cases it will be found a valuable resource. Chloroform liniment will nearly always afford at least temporary relief. Ether applied in the hollow of the hand to the forehead, lotions with spirit of lavender, Cologne water, or bay-rum, the application of a mustard plaster to the back of the neck or the temples, or blisters behind the ears, are sometimes advantageous.

In relation to the permanent cure, sulphate of quinia should always be employed in intermittent cases, and may be tried with the hope of good in others. When there is any suspicion of gout or rheumatism, recourse should be had to occasional purgative doses of sulphate of magnesia and wine of colchicum, to which a full dose of sulphate of morphia may sometimes be added. The chalybeates should be used in anemic cases. If the disease prove obstinate, the whole round of remedies recommended in neuralgia are at our command.

STUPOR AND WAKEFULNESS.

These opposite conditions are mentioned here, not with a view to minute description, but chiefly in order to call attention particularly to the fact that they may each of them be the result of a depression or elevation of the cerebral actions.

By *stupor* is meant that condition of the brain which consists in a suspension more or less complete of the animal functions, while those of the organic life continue, and which bears a close resemblance to sleep, except in the circumstances that it is much less under the control of the will, and depends upon some morbific cause. Under the name may be included various grades of the affection, from heaviness or slight drowsiness to absolute *coma*, in which all consciousness is lost, and from which the patient cannot be roused. It may be produced at any time by pressure upon the brain, whether proceeding from vital causes, forcing too much blood into the cerebral vessels, or producing effusion within the cranium; or from mechanical causes, as depression of the bone, or impediment to a return of blood from the head. We must therefore be upon our guard in cases of coma, and prepared to treat it upon the principle either of morbid pressure, of simple excess of irritation, or of depression. As the result of the last-mentioned cause, it frequently follows the influence of sedative narcotic poisons, such as tobacco, digitalis, or hydrocyanic acid, or the admission of venous or carbonated blood into the arteries of the brain. Coma in children, with largely dilated pupils, and

not ascribable to any obvious cause, may be conjecturally referred to narcotic poison, and, under circumstances favoring that supposition, may be treated with a gentle emetic. I have known of several such instances, in which an emetic brought up a quantity of stramonium or Jamestown seeds.

Wakefulness or *morbid vigilance* certainly proceeds in many instances from an over-excitement of the brain, whether merely nervous or vascular. Thus it is a frequent incident in the early stages of meningeal inflammation and insanity. It is well known, also, to be produced in many persons by coffee and tea, which powerfully stimulate the nervous system, with little effect upon the vascular; and is a common attendant upon the excitement of joy, hope, or anticipation. It appears to be a lower grade of that vascular excitement which, carried farther, ends in stupor.

Very commonly a depression of the vascular actions of the brain, or a purely nervous depression, produces some grade of stupor; but occasionally it may also give rise to morbid vigilance; and this I consider an important practical fact. We see it, as already observed, and as will hereafter be fully shown, proceeding from the suspension of the use of powerful stimulants; (see DELIRIUM TREMENS;) and it is a frequent result of great general debility, without being at all traceable to any irritant cause.

The remedies, whether for stupor or wakefulness, are to be addressed to the pathological condition, whatever that may be, and will be found detailed elsewhere. It may be stated here that coffee and tea may often be advantageously used.

MENTAL DISORDER.

To this head belong delirium, insanity, and certain less usual forms of derangement, of which those especially deserving of notice appear to be ecstasy and somnambulism. *Delirium*, in its different forms and relations, has been, or will be, sufficiently treated of elsewhere, in connection with the diseases of which it is a symptom. Insanity forms the subject of a distinct article.

It remains, then, in this place, only to notice the two

disorders above alluded to under the names of *ecstasy* and *somnambulism*. These are curious mixtures of sensorial and intellectual disturbance, which approach more nearly to delirium or insanity than to any other form of cerebral disease.

ECSTASY.

This is an affection in which, with a loss of consciousness of existing circumstances, and insensibility to impressions from without, there is an apparent exaltation of the intellectual or emotional functions, as if the individual were raised into a different nature, or different sphere of existence. The pulse and respiration may be natural, or more or less depressed; the face is usually pale; and the surface of the body cool. If the pulse is increased in frequency, it is usually more feeble also. The duration of the attack is very uncertain, in some instances not exceeding a few minutes, in others extending to hours or days.

Upon recovering from the spell, the patient generally remembers his thoughts and feelings more or less accurately, and sometimes tells of wonderful visions that he has seen, of visits to the regions of the blessed, of ravishing harmony and splendor, of inexpressible enjoyment of the senses or affections. After the attack is over, he may return entirely to his ordinary health and ordinary pursuits, or he may exhibit some permanent change of character, as the result either of the disease or of the causes which produced it.

The disease is usually brought on by causes which occasion a strain upon the mental functions; a profound exercise of thought, for example, or an overwhelming excitement of the emotions or affections. It is most frequent in persons of a nervous temperament, and women are therefore peculiarly subject to it.

The treatment is simple. During the continuance of the spell, little more is required than to take care that the patient is supplied with nourishment. Should symptoms of prostration appear, they should be counteracted by external and internal stimulation. Should vascular irritation, on the

contrary, threaten serious injury to the brain, it might become necessary to resort to the various measures already recommended for that condition. In obstinate cases, the most effectual remedy would probably be to shave and blister the head. After the attack, attention should be paid to the general condition of the functions; and especial care should be taken to avoid all causes of excitement.

SOMNAMBULISM.

This is a state of the system in which, with an apparently rational concatenation of thought, and the power of consistent action, the patient has completely lost the consciousness of his actual condition, and, in a greater or less degree, the susceptibility to ordinary exterior influences. As it occurs most frequently at night, during sleep, and as the patient is apt to rise from his bed and walk about the house or abroad, persons affected with it are commonly called *sleep-walkers*.

Symptoms.—The most striking phenomenon in the affection is the obvious unconsciousness of the patient of his real position. Like a dreamer, he fancies himself under circumstances which do not really exist, but, unlike the mere dreamer, has the power of acting in accordance with those circumstances. He rises from his bed in pursuance of some course of action in which he supposes himself engaged, or to accomplish some purpose which his fancy has suggested, and all his movements are well concerted to those ends. He appears to be utterly insensible to danger, and frequently puts himself in situations, as upon the roofs of houses, or on the brink of precipitous heights, in which, if awake, he would incur hazard from the loss of self-command.

If left to himself, the sleep-walker generally returns to his bed, sleeps naturally, and awakens at the usual time, quite unconscious of the incidents that have taken place, though sometimes fatigued by his exertions. He can often be awakened by disturbing him considerably in any manner; but among the most effectual methods is to throw cold water upon the surface.

Causes.—The causes of somnambulism are not always obvious. Sometimes it appears to be connected with de

rangement of the alimentary canal or of the uterus. Intemperance is said to have occasioned it. In very mild forms, it is not uncommon in children; but generally ceases before adult age. The severer forms of it are said to occur most frequently in men under the middle age. The affection is asserted to be hereditary.

MOTOR DISORDER.

The motor faculty may be deranged in two modes, independently of a morbid increase under the influence of the will, in which case it is the latter faculty that is affected, and the patient may be considered as insane. The two modes of derangement alluded to are involuntary contraction or spasm, and loss of the power of motion, or palsy. To the latter subject a special article will be devoted. Of spasm, there are several varieties. One striking distinction is into *clonic* and *tonic spasm*, the former consisting in rapidly alternating contraction and relaxation, as in subsultus tendinum and convulsions, the latter of contractions having a certain duration, and attended with rigidity or hardness of the muscle, as in common cramps, and in tetanus.

CONVULSIONS.

These are clonic spasms of the muscles, producing visible motions of the limbs or other parts of the body, and generally attended with unconsciousness. When the contraction is slight, feeble, and short-continued, so as to occasion a mere catching of the tendons, with very little observable movement of the parts into which the tendons are inserted, the affection is denominated *subsultus tendinum*. It may or may not be accompanied with unconsciousness. It is an inferior degree of the same condition that exists in convulsions, often takes place under the same circumstances and from the same causes, and is not unfrequently a precursor of them.

The attack of convulsions may either be preceded by other signs of nervous disorder, or may come on abruptly, without warning. The voluntary muscles of all parts of the body may be affected, or the spasms may be confined

to one-half of the body, to a single limb, or to the features. There may be only a single attack, or several in more or less rapid succession. During the paroxysm, the face is sometimes pale, sometimes purplish or livid, the lips are bluish, the features often apparently swollen, the jugulars distended, and the pulse frequent and irregular. Involuntary evacuations now and then take place. The duration of the convulsions is exceedingly variable. It may be only a few moments, or it may extend to hours or days; but, in the latter case, there is always some remission or intermission of the convulsive movements, though the comatose symptoms continue. Perhaps the average duration of each paroxysm may be stated at from five to fifteen or twenty minutes. Upon its subsidence, the patient is generally disposed to sleep, and not unfrequently remains somewhat comatose for a longer or shorter period. In some infantile cases, however, the child is bright and lively immediately after the cessation of the convulsions. Occasionally, when the paroxysm is over, it is found that some serious cerebral or spinal lesion has taken place, as indicated by the existence of partial paralysis, strabismus or squinting, and various mental disorders; and sometimes the paroxysm is only the commencement of a series of subsequent attacks, occurring at irregular intervals, and constituting epilepsy. In these cases, it is obvious that the disease passes out of the category at present under consideration.

Convulsions sometimes end fatally, though not often, unless connected with other disease. Simple uncomplicated functional convulsions are seldom very dangerous. In fact, the affection is itself probably, in many instances, a safeguard, by directing irritation from the nervous centres to the circumference. Nevertheless, convulsions may prove immediately the cause of death, by interrupting the due innervation of the lungs or heart; and they always demand a vigilant attention, as the possible evidence of very serious disease.

Causes.—The peculiar state of the nervous system in infancy and early childhood may be considered as a predisposing cause. Very impressible from the necessities of the

organization at this age, it must of course feel more sensibly than at other periods of life the influence of disturbing causes. But there is also a great difference in children in this respect. In some, the nervous system is peculiarly liable to this mode of derangement, either from inheritance, from powerful impressions, as some suppose, upon the nervous system of the mother during pregnancy, or from some inappreciable cause, which often determines, in all the children of certain parents, a predisposition of this kind. Nothing is more common than to see all or most of the children of one family peculiarly subject to convulsions, though the parents may have shown no such tendency in their own persons. Children thus predisposed show themselves more impressible than others by ordinary causes, start frequently, are unusually excitable, if not properly controlled, are apt to be fretful or irascible, and occasionally exhibit great precocity. Among adults, females are, for the same reasons, more subject to convulsions than males.

The predisposition to the disease may also be induced by impure air, unwholesome diet, and whatever has a tendency to lower the general standard of health. For reasons explained elsewhere, the anemic condition strongly predisposes to convulsions.

The exciting or immediate causes are very numerous. Strong and sudden emotion, as fear, anger, surprise, etc., is a frequent cause. Insolation, excessive artificial heat, exposure to cold, over-exertion, and falls or other accidents, may induce convulsions. But they are much oftener the result of an irritation transmitted to the brain from some other part of the body. One of their most frequent sources is the irritation of teething. Perhaps even more so is that proceeding from indigestible or acrid substances in the alimentary canal. Articles of food not readily dissolved by the infantile stomach are very often the cause of convulsions. So also are acid in the stomach and bowels, intestinal worms, and the acrid secretions consequent upon disordered hepatic function. Whatever occasions spasm in the intestines may induce convulsions; for there is nothing which more powerfully discomposes the infantile nervous system than violent

pain. A cause, perhaps not sufficiently appreciated, is the milk of the mother or nurse. This occasionally produces the effect, even when the nurse is apparently healthy. It is said that agitating or exciting emotions will sometimes so affect the milk as to induce convulsions in the suckling. The use of certain articles of food or of medicine may have the same effect. I have known convulsions in the infant to be the apparent result of antimonial medicines administered to the mother. Irritating purgatives, or other medicines, have sometimes the same effect directly on the child. The reader cannot be too strongly impressed with the importance of looking to the gums and to the alimentary canal of children as the seat of the cause of convulsions. The retreat of an habitual irritation from the surface of the body is another occasional cause. Hence, convulsions sometimes follow the disappearance of a cutaneous eruption. The irritation of whooping-cough sometimes provokes them.

Too great vascular fulness or excitement may induce the disease in those predisposed to it; and if at the same time there exist peculiar nervous disturbance, convulsions will be very apt to result. Hence their great frequency in febrile diseases. Some children never have an attack of fever without convulsions. They are peculiarly frequent in the exanthematous fevers.

Treatment.—This divides itself into such as may be proper in the convulsion, and such as may be required after it has subsided. During the paroxysm, the patient should be placed where he may breathe a fresh and pure air, of a moderate temperature, and especially not too much heated; and every part of the dress which may act in any degree as a ligature, should be loosened. Hot water may be immediately directed for the feet, sinapisms may be got ready for the extremities, and if the head is at all heated or flushed, cold water may be applied to the scalp. After failure with all these measures, a gentle emetic of ipecacuanha, if the patient can swallow, will sometimes put an immediate end to the paroxysm.

The feet may be enveloped in poultices of bread and milk, or flaxseed meal, mixed with well-bruised garlic or

onions; brandy heated with garlic, or a mixture of oil of amber, olive oil, brandy, and laudanum, may be applied warm along the whole length of the spine, and over the abdomen; and assafœtida, musk, oil of turpentine, or oil of amber, may be injected into the rectum. If the gums are much swollen, and apparently painful, they should be freely lanced.

In the interval, a full cathartic dose of calomel should be administered, to be followed in due time, if it do not operate thoroughly, by a dose of castor oil. The head should be kept cool; any existing febrile excitement met by means of the antimonials or neutral mixture; and nervous disturbance controlled by gentle antispasmodics, such as sweet spirit of nitre, Hoffmann's anodyne, or camphor water. At the same time, gentle revulsion should be maintained towards the extremities; the bowels should be kept in a soluble state by saline laxatives, and the diet should be restricted to farinaceous substances, or in infants to these with the milk of the nurse in moderation. Should there be a disposition to the return of the convulsions, more decided revulsion should be effected by means of blisters between the shoulders or to the extremities.

In the cases of pure irritation, besides removing the cause, it is proper to diminish the nervous susceptibility, and to control the cerebral irritation, by diffusing the excitement over the whole nervous system. To meet the first indication, narcotics may often be employed with advantage; and none is more efficacious than opium, which, to diminish its stimulant influence, may be combined in some instances with ipecacuanha. Hyoscyamus, lactucarium, or conium may be substituted, if on any account thought preferable. The second indication, above alluded to, is to be fulfilled by antispasmodics, administered by the mouth, the rectum, or the skin, and by the use of tonics, of which the metallic are deemed most efficient. Of these the oxide of zinc has perhaps enjoyed most reputation, though the chalybeates should be preferred in anemic cases. Should the digestion be impaired, and the system at large feeble, the simple bitters or quinine might be preferable to the

metallic tonics. These various remedies may often be combined in the same prescription. Thus, opium or hyoscyamus, assafœtida, and either oxide of zinc, carbonate of iron, sulphate of quinine, or extract of gentian or quassia, may very properly go together. The cold or shower bath, cautiously used, may also serve to strengthen the nervous system. Fresh air and a nutritious diet of easy digestion are important.

But an account of the treatment would be imperfect without a more particular reference to the mode of removing some of the more prominent causes. When the gums are in fault, they should be freely lanced; and, if the tendency to convulsions continue, a pair of blisters should be applied behind the ears. If the affection is connected with acid in the stomach and bowels, recourse should be had to the antacids, of which magnesia may be used when a laxative effect is desired; carbonate of lime, if diarrhœa exist; aromatic spirit of ammonia, when a stimulant effect is indicated; and one of the alkaline carbonates, or bicarbonates, when there is no especial indication, and the extrication of carbonic acid in the bowels is not feared. The existence of worms would lead to the employment of calomel as a purge, and of oil of wormseed, or oil of turpentine, as an anthelmintic.

Any derangement in the hepatic secretion should be carefully observed, and treated with minute doses of calomel, blue-pill, or mercury with chalk. When the disease depends on intestinal spasm, great advantage will often accrue from the use of laudanum with assafœtida, or spirit of ammonia by the mouth, the injection of musk into the rectum, the application of a mustard cataplasm, or blister over the abdomen. Should the disappearance of a cutaneous eruption have preceded the convulsion, efforts should be made to restore it by friction with croton oil, or other active irritant. In urgent cases, a blister might be produced by means of the strong solution of ammonia on the surface previously affected. Finally, great attention must be paid to the diet of the patient, in order that nothing irritating

should enter the stomach; and when there is any reason to suspect the milk of the mother or nurse, it should be changed for that of a perfectly healthy woman.

CATALEPSY.

This term is used to designate an affection characterized by a loss more or less complete of consciousness, with a peculiar rigidity of the muscles, causing the body, and each portion of it, to retain the position in which it may have existed at the moment of attack, or in which it may afterwards be placcd. The disease is seldom idiopathic or solitary; but is generally combined with some other affection, especially hysteria, somnambulism, and insanity. It may attack both sides of the body, one side only, or a single limb. Sometimes the attack is preceded by signs of nervous disorder, sometimes comes on without premonition.

When the whole body is attacked, the patient becomes stiff like a statue, and remains standing, sitting, or lying, according to the posture at the time of seizure. Upon any attempt to move the limbs by another, though there is some degree of stiffness, they generally yield to the impulse, and afterwards retain the position in which they may be placed, however ludicrous or seemingly painful. The features are usually composed; though it is said the muscles of the face obey the general law, and that the same expression of countenance is retained as may have been exhibited at the moment of attack. The pulse is variously affected, being in some instances healthy, in others accelerated, and in others diminished both in frequency and force. During the continuance of the attack the evacuations are either suppressed or involuntary.

The duration is quite uncertain: it may be only a few minutes, or it may extend to hours or days. In some cases the attacks are repeated with greater or less frequency, and in this way the complaint may continue for months or years. Upon the solution of the paroxysm, the patient often complains of headache, and a feeling of muscular soreness or fatigue; but is in general wholly unconscious of

what has passed, and sometimes, it is said, resumes a conversation or action in which he may have been engaged when attacked, at the point at which it was interrupted.

There is usually in the intervals some evidence of nervous disorder, very often connected with derangement of the alimentary canal, or, in the female, of the uterus.

Causes.—An excitable condition of the nervous system, analogous to that which exists in hysteria, constitutes a predisposition to this affection. Women and children are peculiarly liable to it. Any strong emotion, or unusual or protracted intellectual exertion, may serve as an exciting cause. Strong sexual desires, or excessive indulgence, are said to have brought on attacks. Paroxysms of the disease have also been ascribed to worms, to the retrocession of cutaneous eruptions, and to the cessation of habitual discharges. Probably the most frequent exciting causes are stomachic, intestinal, and uterine irritations.

Treatment.—Purging is indicated, especially in cases of amenorrhœa, in which aloes should be employed in full doses. Cold should be applied to the head, if it be in any degree heated. The warm bath may be tried, though its utility is not universally admitted. All the organic functions should be maintained as nearly as possible in the healthy state. Any spinal irritation that may exist must be corrected in the usual manner. Should the paroxysms be periodical in their recurrence, quinine might be expected to prevent them. Anemic cases would require the chalybeates. Debility must be counteracted by tonics, the shower-bath, or sea-bathing, exercise in the intervals of attack, and a nutritious, easily-digested diet. Should respiration be suspended, it should be restored artificially.

INSANITY—MADNESS—MENTAL DERANGEMENT—LUNACY.

Insanity is a general term, including all derangements of the intellectual and moral functions not forming a part of some other recognized disease, nor an ordinary physiological result of the time of life.

The disease is seated essentially in the brain. It is through that organ exclusively that we think, and experi-

ence emotion; and derangements in these two modes of mental exhibition, whatever may be their remote cause, are necessarily cerebral disorders. But insanity is by no means a simple mental condition. The brain, if not a complex organ, certainly has complex functions; and it may be deranged in the whole of these functions, or in one principally, or in any number of them, and there is scarcely an end to the diversity of mental disorder which may thus arise. Some arrangement, however, is necessary for the purpose of description; and I know of none better than that which divides the disease into general and partial insanity, mania and dementia, belonging to the first division, and moral insanity, monomania, and insane impulse, to the second.

By *general insanity* is meant a derangement, in a greater or less degree, of all the cerebral functions connected essentially with mind; by *partial insanity*, a derangement of a portion only of these functions. *Mania* is that form of general insanity in which there is an exaltation of the cerebral actions; *dementia*, that in which the brain is enfeebled, and the mental operations all participate in its weakness. Partial insanity takes the name of *moral insanity*, when it appears to affect only the emotional functions, as contradistinguished from the intellectual; of *monomania*, when, with a general soundness of thought, there is delusion upon some one point, or in some one direction; and of *insane impulse*, when, without reflection, and without any known perversion of the feelings or passions, the patient is irresistibly impelled to some insane act. Each of these modes of insanity requires a distinct description.

It is necessary to guard against the mistake of supposing that all cases of insanity can be referred clearly to one or the other of these varieties. Each one of them is occasionally well characterized; but cases are constantly occurring, either intermediate in their nature, or combining the peculiarities of two or more of the varieties, so that it would be impossible to refer them to any one division; and the same case occasionally exhibits, in its different stages, all the different phases of the disease.

MANIA.

This form of mental derangement is more common than any other, and is the most easily recognized. It consists in an unhinging of the mind, a general disturbance of the mental powers, a want of co-operation among the different faculties. Most usually, however, the imagination is the most in fault, and the will the least. The judgment is also frequently little disturbed, the subject coming to correct conclusions, supposing his premises to be correct. The disorder sometimes comes on very suddenly as the consequence of some great mental shock, or as a sequela of an acute disease; but generally its approaches are slow, and friends are long coming to the conclusion that the subject is *deranged*, attributing his waywardness and the incongruity of his conduct to eccentricity or other causes, and it is not until he breaks out into some violent excitement that they entertain the idea of insanity. The history of this disease, its diagnosis, and its *medico-legal* aspect would occupy a volume; we will therefore leave it to the good sense of friends to determine where sanity ends and insanity begins, and proceed to make a few observations on its management.

As a general rule the patient should be at once sent to some well-regulated lunatic asylum; his chance of recovery is incomparably greater in these establishments as now conducted than at home among friends. One thing which will account for this is that almost uniformly the patient takes an aversion to his relatives and most intimate friends, often imagining that they have conspired together to take his life. The consequence is that he will submit to any other rather than to them. Then, every arrangement about a modern asylum has been made, under scientific control, to conduce to the happiness, comfort, safety, and easy control of the inmates, and then he will be under the immediate eye of an intelligent physician who makes mental diseases a speciality, and has been chosen for his fitness to take charge of patients suffering from this class of disease. In every view of the subject, therefore, it is advisable to

remove the patient, as soon as possible, to an asylum for the insane. But if this can not be done, then the following measures will give the patient the next best chance of recovery.

Every artifice should be resorted to to avoid irritating the patient, and no allusion should ever be made to the subject of his insanity, but some plausible explanation should be made to him to account for his peculiar feelings. The medical treatment most proper in such cases is quite plain and simple; his bowels should be kept rather active by saline purgatives, and a sufficient amount of opium given every evening to insure sleep; cold water should be applied daily, either by the shower-bath or sponging; his diet should be light but nourishing, and a succession of small blisters should be kept up along the spine.

If it is suspected that the suspension of any ordinary drain, as hemorrhoidal flux, discharge from an old sore, or chronic diarrhea, etc., has brought on the disease, it should be restored, or a substitute set up. Any discoverable departure from health should be met by appropriate remedies.

DEMENTIA.

This is characterized by general feebleness of all the mental powers. It differs from idiocy only in that in the latter there never was any active mental power, and that in the former there will generally be retained rational ideas which have been, as it were, stereotyped on the brain. It may come on as an original disease, but generally is a consequence of a previous condition of active mania, and hence offers little hope of an amendment. Time and good treatment are our dependence in such cases.

MORAL INSANITY.

In this form of mental aberration it is supposed that the emotions are only concerned, causing the subject to hope or fear, to love or hate, to be joyous or melancholy, without cause and without reason. But as very high authority has now taken ground against the existence of *moral insanity*, as well as *insane impulse*, deciding that nothing can

properly be called insanity without hallucination, and as both have been made the excuse for the perpetration of the foulest crimes, we will pass them over without further comment.

MONOMANIA.

This form of insanity stands upon better ground than the last named, as it is often attended by the wildest *hallucination*, the subject imagining himself somebody else, or that he occupies a different position in society from what he does, as that he is governor, king, etc. It seems to be the effect of a derangement in one or more compartments of the brain, while all the others are in good working order.

The world can afford very many instances in which persons have acquired, and deservedly, too, high distinction in certain pursuits or in particular departments of literature, which, if examined into critically, have been the result of what might not inappropriately be denominated congenital monomania. That is, the individual owes his superiority in the department in which he has excelled to a morbid development of a particular department of the brain. Thus an excessive development of the organs of ideality, comparison, and language may enable one to engage in fields of romance, or weave most beautiful and entrancing poetical fabrics, which are often, indeed, a "thing of beauty and a joy forever;" and yet, if you become intimately acquainted with the author, you will perceive that on every other subject he is not only weak as other men, but perhaps is so deficient in other respects that he becomes a source of vexation, mortification, or pecuniary expense, to his friends. O, how humiliating is it to know that many of our brightest literary and poetical gems are the product of an unbalanced mind, rendered monomaniacal by inheritance or disease!

Hypochondria appears to be a variety of monomania, differing in that the brain, in this case, is only sympathetically affected by its association with derangement of the liver and other digestive organs.

In the management of the insane there should be as much of liberty as is consistent with the safety of the patient and

others; as little as possible of forcible restraint. Nothing that can be avoided should remind him of his difference from other men. His apartment, though well secured, should not look like a prison cell. In all his movements he should be carefully watched and guarded, when not well enough to be trusted to himself; but this should be done in a manner not to excite his suspicions. The attendance upon him should appear in the form of friendly care, companionship, or service, as the case may be, not of the watch of a jailer over his prisoner. Nothing more excites anger and maintains a turbulent spirit in the insane, than violent restraint. Independently of its positive discomfort, they feel it as an unprovoked and unwarrantable injury. How is it possible for a brain to recover its regular and calm movements, when thus tortured by fierce excitement? Happily, the days of chains, dungeons, the scourge, and starvation are passing away. But it is mournful to reflect upon the numbers formerly goaded into incurable madness, or sunk into hopeless mental impotence, who under judicious management might have been restored to comfort and usefulness.

DELIRIUM TREMENS—MANIA A POTU.

This is the delirious affection which follows the suspension of the habitual use of alcoholic drinks or other stimulants. Its essential character consists in the cerebral debility consequent upon the cessation of an accustomed excitement. The most prominent symptoms are delirious hallucinations, the dread of impending evil, muscular tremors, and the want of sleep.

Should circumstances, however, prolong the abstinence or privation, this preliminary condition becomes aggravated, and the disease is fully formed. The perceptive faculties are now disordered; and the patient receives false impressions through his senses, which he at first often recognizes as imaginary, and may even be disposed to smile at, but which soon acquire in his convictions all the force of reality. Not unfrequently it happens, for a time, that the phantasms seem real at night or in darkness, and either vanish or are

known for what they are by daylight. The patient sees the most grotesque, frightful, or disgusting objects; little hobgoblins of all possible shapes flying about the apartment, leering, hissing, threatening; serpents, toads, rats, mice, and other loathsome reptiles and vermin, crawling over his bed or person, or running about his room; creeping insects, which he appears busied in searching for among his clothes or the bed covering. There is no end to the number or diversity of these hallucinations in different individuals.

But with all this variety in the objects of delusion, there is one striking feature of the delirium which is seldom wanting. The patient is almost always fearful, and usually has some special object of terror, which influences most of his movements.

Very often the manner of the patient is quiet and gentle. He recognizes persons about him, receives his physician courteously, answers his questions without hesitation, and, if his attention is roused and strongly fixed, will give quite rational answers upon all points except such as are connected with his hallucinations.

Morbid vigilance is one of the most prominent and characteristic symptoms. The disease begins with broken and disturbed rest, becomes confirmed with the occurrence of obstinate wakefulness, and ends when the patient is enabled to sleep profoundly. It frequently happens that not a wink of sleep is obtained for several days, and it is said sometimes not for one or even two weeks.

At the end of three or four days, though sometimes as late as a week, or later, if no untoward event happens, the patient generally falls into a sound sleep, which may continue for twelve, eighteen, twenty-four, and, it is said, even for thirty-six hours. From this he awakes, feeble, pale, and trembling, but free from his illusions, and, generally, disposed to eat. Convalescence has now commenced, and though some delirious symptoms may occasionally linger or recur for a day or two, they gradually disappear entirely, and the patient is restored to health. Not unfrequently the first sleep is only for a few hours, and is followed by an

amelioration of the symptoms, which subsequently disappear upon a return of rest.

Instead, however, of this favorable course, cases improperly treated, or without any treatment, sometimes lapse into what may be called the third stage, which is characterized by great prostration. The delirium is now complete; the previous illusions give way to incoherence; extreme restlessness takes place, so that it is necessary often to confine the patient forcibly to his bed; the tremors are excessive; the pulse is extremely frequent and feeble; cold or warm sweats cover the surface; the features are sunken and haggard; the tongue is brown and dry; the pupils are either much contracted or dilated; and subsultus tendinum, muttering delirium, coma, and convulsions, precede death.

Simple, uncomplicated delirium tremens is not a dangerous disease. It generally subsides spontaneously, and, under proper treatment, almost always ends favorably. The chief danger is of death from debility, and especially from exhaustion after muscular exertion; and, if this be guarded against, there is little else to apprehend. Sometimes, also, the patient destroys himself, but very rarely with suicidal intention.

But when the disease is complicated with cerebral inflammation, or a high degree of active cerebral congestion, when it supervenes upon a severe injury, or occurs in the course of another serious disease, it adds no little to the danger; and such cases not unfrequently end in death. Stupor, convulsions, complete incoherence, muttering, subsultus, extreme frequency of pulse, a dry tongue, and a cold, clammy surface, are unfavorable signs.

Very few die of the earlier attacks. Each successive one becomes more dangerous, because usually occurring in a more debilitated constitution, and associated with a greater amount of organic disease. Yet some individuals recover from very numerous attacks, and die at last either of some accidental disease, or of the complicated organic derangements resulting from intemperance, independently of the delirium.

Treatment.—According to the view here taken of the pathology of delirium tremens, the indications of treatment are clearly, *first*, to stimulate the brain up to the point essential to its correct action; and, *secondly*, after having thus reinstated it in its normal functions, to withdraw gradually the artificial support, and bring the organ safely back to a reliance upon the ordinary healthy influences. In almost all uncomplicated cases, these objects can be accomplished without difficulty, provided the treatment has not been postponed so long that the system has sunk below the point of impressibility. Nothing in the range of our experience will do this so certainly, and with so little danger, as the comp. syrup of valerian, or fever syrup. But it must be given in decided doses. We have often given as much as two ounces at once, with the happy result of a complete suspension of the disease in half an hour. Nothing else has been found necessary, except that in bad cases we apply the chloroform liniment freely to the spine and epigastrium.

PARALYSIS.

General Observations.—By paralysis, or palsy, is meant a total or partial loss of sensibility or motion, or of both, in one or more parts of the body. All paralytic affections may be divided into two classes: the first including those in which both motion and sensibility are affected; the second, those in which the one or the other only is lost or diminished. The former is called *perfect*, the latter *imperfect* paralysis. Again, the paralysis may be *general* or *partial*, as it affects the whole body or only a portion of it. Partial paralysis is divided into *hemiplegia*, when it is limited to the lateral half, and *paraplegia*, when it is confined to the inferior half of the body. The term *local paralysis* is used when only a small portion of the body is affected, as the face, a limb, a foot, etc.

There are also certain forms of paralysis arising from the use of metallic poisons, as *mercurial palsy*, and *saturnine* or *lead palsy;* and lastly, there is a peculiar affection known as *paralysis agitans*, or shaking palsy.

GENERAL PARALYSIS.

General paralysis, or complete loss of sensation and motion of the whole system, cannot take place without death immediately resulting; but this term is usually applied to palsy affecting the four extremities, whether any of the other parts of the body are implicated or not. It must not be confounded with the general paralysis of the insane. In most cases the loss of motion is more marked than that of sensibility; the intelligence also soon becomes affected.

HEMIPLEGIA.

This term is used to denote paralysis of one side, extending generally to both the upper and lower extremities. It is the most common form of palsy; the left suffers more frequently than the right side. When only one extremity suffers, it is generally the arm. Very rarely, the upper limb of one side and the lower of the opposite is affected, forming what is termed *transverse* or *crossed palsy*. Generally the paralysis extends to the side of the face, the angle of the mouth being drawn slightly upwards and to the sound side, clearly because the muscles on that side are no longer counteracted and balanced by the corresponding muscles on the paralyzed side. The tongue also is often affected; when protruded, its point is turned towards the palsied side, owing to the muscles which protrude this organ being powerless on that side and in full vigor on the other, so that the sound half of the tongue is pushed out farther than the other half, and consequently it bends towards the affected side. The paralysis is always limited to one-half of the body, the median line being the boundary. In most cases there is anæsthesia, [loss of sensibility.] The mental faculties are sometimes uninjured, but more frequently are irreparably damaged. The memory especially becomes affected; at the same time there is a peculiar tendency to shed tears, and to be much affected by slight causes.

If recovery take place, the symptoms of amendment are first noticed in the leg. In hopeless cases the limbs waste; their nutrition is diminished; they become atrophied. It

is of practical importance to remember that they are colder, and unable to resist the influence of cold or heat equally with the sound parts.

Hemiplegia is generally the result of organic lesions of the brain. It may be transient, and caused by a fit of epilepsy; or it may follow chorea; or an imperfect form may occur in nervous women, (hysterical hemiplegia.) In all forms the paralysis of motion is the prominent symptom; but sensation is generally impaired.

PARAPLEGIA.

Paraplegia, or paralysis of the inferior half of the body, most frequently commences slowly and insidiously, with weakness and numbness of the feet and legs, or with tingling, *formication*, of these parts, unattended by pain. By degrees the weakness increases, until there is complete loss of sensibility and motion in the lower extremities, with paralysis of the bladder and rectum; the patient is obliged to remain in the horizontal posture; sloughs form on the hips and sacrum; and these, by their irritation and exhausting discharges, accelerate death. If the urine be allowed to collect in the bladder in any quantity, it will become ropy, fetid, and alkaline; owing probably to the coats of the bladder becoming diseased and pouring forth unhealthy mucus, in consequence of the paralysis.

Although voluntary motion is completely abolished in the lower limbs, involuntary movements and spasms of the muscles are not uncommon. Reflex movements can be excited much more frequently in paraplegia than in hemiplegia.

Paraplegia may arise from injury of the spinal cord or its membranes; from inflammation or other diseases of these parts; from tumors pressing upon the cord; as well as from affections of the bones and cartilages of the vertebral column. There seems reason to believe, also, that some cases may be merely functional; that is to say, that no organic change exists which we can recognize. Intemperance, cold, excessive venery, etc., seem to produce this form.

LOCAL PARALYSIS.

Of the different varieties of local palsy, I shall only mention *paralysis of the face*. As one-half only of the face is affected, the appearance is very striking, the features on the paralyzed side being blank, unmeaning, and void of all expression. It is generally free from danger, being but rarely connected with cerebral disease; exposure to cold is a frequent cause of it.

MERCURIAL PALSY.

Mercurial palsy, or mercurial tremor, as it is sometimes termed, consists of a kind of convulsive agitation of the voluntary muscles, which is increased when volition is brought to bear upon them. In advanced stages of the disease, articulation, mastication, and locomotion are performed with difficulty; while the use of the hands is almost entirely lost. The skin acquires a brown hue, and the teeth turn black. Workmen exposed to the fumes of mercury, such as gilders of buttons, glass-platers, barometer-makers, etc., are very liable to it.

LEAD PALSY.

This affection usually follows or accompanies colica pictonum, though it may exist independently. The poison of lead appears to exert some peculiar noxious influence over the nerves of the forearm and hand; in consequence of which the extensor muscles of the hands and fingers become paralyzed, so that when the arms are stretched out the hands hang down by their own weight, or, as the patients say, the *wrists drop*. The inferior extremities are very rarely affected. The sufferers frequently experience attacks of lead colic. A characteristic symptom of the presence of lead in the system is the existence of a blue or purplish line—the sulphuret of lead—round the edges of the gums, just where they join the teeth; a very important aid to diagnosis, for the notice of which we are indebted to Dr. Burton. Plumbers, painters, color-grinders,

type-founders, etc., are the usual sufferers from this affection.

PARALYSIS AGITANS, OR SHAKING PALSY.

This disease is characterized by a tremulous agitation—a continued shaking—usually commencing in the hands and arms, or in the head, and gradually extending over the whole body. The disease progresses slowly, but when far advanced the agitation is often so violent as to prevent sleep; the patient cannot carry food to his mouth; deglutition and mastication are performed with difficulty; the body is bent forward, and the chin bent on the sternum; the urine and fæces pass involuntarily; and coma with slight delirium closes the scene. Many cases, however, remain stationary during the remainder of the patient's life, except that the disease is worse at some times than at others.

Treatment of Paralysis.—As paralysis is only the effect of some morbid lesion in one or other of the nervous centres, our treatment must be directed to the pathological condition on which it depends.

In *hemiplegia*, even when seen early, it must not be forgotten that the mischief is done; and we cannot remedy it by taking away blood. Indeed, the patient will require all the power which he possesses to enable him to recover from the shock to his system; and hence depletion will only do harm. Benefit may, however, be expected from active cathartics, particularly such as jalap and scammony combined with calomel, or croton oil, or stimulating purgative enemata. Some authors recommend blisters to the scalp or to the nape of the neck, or the use of a seton. I should also try alterative doses of mercury, with iodide of potassium, etc. When the paralysis becomes chronic, stimulants, especially such as act on the paralyzed parts, must be had recourse to. Strychnia in small doses (the twentieth or thirtieth part of a grain thrice daily) may be cautiously tried, if we can reasonably hope that there is no disease of the brain. Or local stimulants may be employed; thus frictions with the hand or flesh-brush, and stimulating liniments of turpentine, ammonia, tincture of cantharides,

croton oil, etc., have been used with occasional benefit. Electricity and galvanism have also been extensively employed, but when there is structural disorganization they undoubtedly do harm.

The same principles apply to the treatment of *paraplegia*, arising from disease of the cord or its covering. In many of these cases, however, a mercurial course does decided good. The iodide of potassium, with liquor potassæ and sarsaparilla, will also be useful. Where the paralysis seems to depend upon serous effusion into the spinal cavity, Dr. Seymour recommends the tincture of cantharides in half-drachm doses. Embrocations may also be applied along the spine.

In *mercurial palsy* the patient must be withdrawn from the injurious atmosphere. Warm baths, good diet, sea-air, and iodide of potassium—for reasons to be presently mentioned—will generally effect a cure.

The treatment of *lead palsy* has been very much facilitated by the hypothesis promulgated by M. Melsens, that the effects of lead and mercury were caused by chemical combination with the tissues of the body, or by being present in intimate union with those tissues in some analogous manner. The therapeutical application of the theory necessarily was, as pointed out by Dr. J. R. Nicholson, that the action of the curative agent must be directed to the conversion of the poisonous metal into a compound having less affinity for those tissues, and therefore readily eliminated from the body; and it has been shown that iodide of potassium possesses the requisite conditions to become a curative agent in lead diseases, according to this theory.

Dr. Nicholson has published a very interesting case in which the lead, after the administration of the iodide of potassium, could be readily detected in the urine, notwithstanding it could not be found before the commencement of the treatment; but though the colic had entirely ceased, the palsy persisted. Galvanism was then used in conjunction with the iodide of potassium, and the patient went to his work about fifty days after the commencement of the treatment without any trace of paralysis. From this case

it is concluded: First, that the iodide of potassium acts as a curative agent in lead-poisoning, by converting the lead into a form which can again be readily taken up by the blood, and evacuated by one of the natural outlets; secondly, that the iodide acts more speedily in conjunction with galvanism, when employed for the relief of lead paralysis.

In addition to the iodide of potassium—gr. v. thrice daily—the patient may use warm baths, friction to the paralyzed limb, and exercise in the fresh air. To prevent this disease, Liebig recommends all workers in lead to drink daily sulphuric acid lemonade. This acts probably by converting the salt of lead, as it enters the system, into an insoluble sulphate.

As regards the cure of *paralysis agitans*, I can say but little, since I know of no measures likely to do much good. I should, however, try the effects of pure air, nourishing diet, baths, ferruginous tonics, and occasional opiates.

EPILEPSY.

Epilepsy is a disease the leading symptoms of which are—sudden loss of consciousness and sensibility, with clonic spasm, usually followed by coma; the attack recurring at intervals.

Warnings.—There are sometimes, though not in the majority of cases, premonitory symptoms sufficient to warn the patient of an approaching seizure. These warnings differ both in duration and character; in some cases being too short to allow the sufferer to dismount from horseback, or to get away from the fire, or even to lie down; while in other instances, many minutes, or even hours, elapse between their occurrence and the attack. Spectral illusions, headache, giddiness, dimness of vision, confusion of thought, and especially that peculiar sensation known as the *aura epileptica*, constitute the most frequent premonitory symptoms. The epileptic aura is differently compared by patients to a stream of cold water, or a current of cold or warm air, or the creeping of an insect; the sensation com-

mencing at the extremity of a limb, and gradually ascending along the skin towards the head; and when it stops, the paroxysm taking place.

Symptoms.—The commencement of the seizure is generally characterized by the utterance of a loud, piercing shriek or scream, immediately after which the individual falls to the ground senseless and violently convulsed. Hence the disease has been called by the vulgar the *falling sickness*, or, more vaguely, *fits*. During the attack the convulsive movements continue violent; there is gnashing of the teeth, foaming at the mouth, the tongue is thrust forward and often severely bitten, the eyes are fixed and partly open, the breathing is laborious or almost suspended, the face flushed and turgid, and death, in fact, seems about to take place from suffocation; when, gradually, these alarming phenomena subside, and shortly afterwards cease, leaving the epileptic insensible, and apparently in a sound sleep, or state of coma, from which he recovers exhausted, but without any knowledge of what he has just gone through.

The average duration of the fit is about five or eight minutes; it may last for half an hour or more. It may also be very slight or very severe. The periods at which the seizures recur are variable. At first there is often an interval of two or three months, but as the disease progresses the intervals become shorter, until hardly a day passes without one or more paroxysms. In recent cases, especially, the fits often take place in the night, either on just going to sleep or on awaking. As may be imagined, various accidents are likely to occur from falls, etc., during the attack.

Causes.—The tendency to epilepsy is often hereditary. Malformations of the head are frequent predisposing causes. When an epileptic dies who has only labored under the disease for a short time, no appreciable lesion of any part of the nervous system can, as a rule, be discovered. If death occur during a paroxysm, the brain is often found more or less congested. In cases of long standing, disease

of the cerebral blood-vessels, with softening or induration of the brain, may be found. Occasionally the bones of the skull are thickened or otherwise diseased.

Treatment.—This must have reference to the measures to be adopted during a fit, and those to be employed in the interval.

During the fit.—The patient should be laid on a large bed, air freely admitted around him, his head raised, and his neckcloth, together with any tight parts of his dress, loosened. A piece of cork or soft wood should, if possible, be introduced between his teeth, to prevent injury to the tongue. Cold affusion to the head will sometimes be useful, especially if the countenance is turgid and congested. In cases preceded by the epileptic aura, the application of a ligature just above the part where the sensation is experienced, has been said to prevent the attack.

In the interval.—We must endeavor to improve the patient's general health, and especially to give tone and firmness to the nervous system. Every thing tending to depress the vital powers does harm. Mineral tonics, especially the salts of iron, zinc, and silver, are consequently to be employed. The cold shower-bath may be especially recommended, if it can be well borne; otherwise the tepid sponging bath should be substituted. The diet must be simple but nutritious, avoiding intoxicating drinks, and the patient's habits must also be regulated by such rules as common sense will dictate—daily exercise, early hours, and attention to the alvine and urinary secretions being necessary, while mental excitement or exertion is, on the other hand, especially contra-indicated.

In some cases, those more particularly which are dependent upon the thickening of the cranial bones, iodide of potassium, or a gentle, long-continued course of mercury, does good. Fovill had great faith in the oil of turpentine in half-drachm doses, repeated every six hours; care is required, however, lest strangury result from its use. The nitrate of silver long enjoyed great but undeserved reputation; its tendency to blacken the skin, moreover, is sufficient to interdict its employment. I have used the vapor

of chloroform, and believe that I have found the fits diminish both in severity and number from its employment. The truth probably is, however, that epileptics often improve for a time under every new plan of treatment.

HYSTERIA.

Dr. Copeland defines hysteria as, "Nervous disorder, often assuming the most varied forms, but commonly presenting a paroxysmal character, the attacks usually commencing with a flow of limpid urine, with uneasiness or irregular motions and rumbling noises in the left iliac region, or the sensation of a ball (*globus hystericus*) rising upwards to the throat, frequently attended by a feeling of suffocation, and sometimes with convulsions; chiefly affecting females from the period of puberty to the decline of life, and principally those possessing great susceptibility of the nervous system, and of mental emotion."

I shall consider this disease as it occurs in paroxysms, and as it mimics other affections.

Symptoms.—The symptoms which characterize the hysteric paroxysm or fit are convulsive movements of the trunk and limbs; violent beating of the breasts with the hands clenched, or tearing of the hair or of the garments; shrieks and screams; violent agitation; and the globus hystericus; the attack ending with tears, convulsive fits of crying or laughter, and sometimes with violent hiccup. Occasionally the patient sinks to the ground insensible and exhausted, remains so for a short time, and then recovers, tired and crying. The fit is often followed by the expulsion of a quantity of limpid urine; occasionally this secretion is passed involuntarily during the paroxysm.

Diagnosis.—It differs from epilepsy, inasmuch as the fit is almost peculiar to women; it continues longer; there is seldom loss of consciousness, the patient being aware of all that is passing around her. The convulsive movements are of a different character, much less severe, not more marked on one side of the body than the other; the respirations are never suspended; the tongue is not bitten; and the attack is not followed by coma, as epilepsy is.

Hysteria simulates almost all diseases; perhaps the favorite maladies imitated are, suppression of urine, calculus of the bladder, inflammation of the peritoneum, pleurisy, consumption, laryngitis, stricture of the œsophagus, aphonia, or loss of voice, paralysis, and disease of the spine or of one or more of the joints. A practiced eye is seldom, however, deceived by such patients. There is a peculiar expression about hysterical women, impossible almost to define, yet readily recognized when once it has been studied; they answer questions in an unpleasant manner, often only in monosyllables; and their pains are always said to be most acute, and to be increased by pressure, or almost even by pretended pressure. The catamenia are generally irregular, and there is often profuse leucorrhœa.

Treatment.—During a fit, the patient's dress should be loosened; she should be prevented from injuring herself; should be surrounded by cool air; smelling-salts may be applied to the nostrils; and, if she can swallow, a draught containing a drachm of the compound tincture of valerian, or of the fetid spirit of ammonia, should be administered. If the paroxysm continues, the sudden and free application of cold water to the head and face will probably cut it short.

In the other forms of hysteria, the general health must be attended to, the bowels kept freely open, the shower-bath daily used, and tonics administered. When the menses are unnatural, the treatment must have reference to the nature of the particular disorder; thus, if too abundant, astringents and the cold hip-bath, to which alum should be added, must be employed; if scanty, they should be encouraged by aloetic purgatives, different preparations of iron, and the warm bath. The compound syrup of butternut (see DYSPEPSIA) will often fulfill every indication in the treatment of hysteria.

The patient's diet should be regulated; hot rooms and evening parties proscribed; stays ought not to be worn; and, lastly, it is of the greatest importance that healthy mental occupation should be found. Indeed, without this a cure is not to be expected.

CHAPTER VII.

FUNCTIONAL DISEASES OF THE SPINAL MARROW.

CHOREA, OR ST. VITUS'S DANCE.

Chorea, or St. Vitus's dance, is characterized by incomplete control of the muscles of voluntary motion by the will, giving rise to irregular, tremulous, and often ludicrous actions. It has been quaintly designated "insanity of the muscles."

Symptoms.—This disease occurs most frequently in young girls between the age of six and fifteen, and begins generally with twitchings of the muscles of the face. By degrees, all or almost all the voluntary muscles become affected; the child finds it impossible to keep quiet; there is a constant movement of the hands and arms, and even of the legs; one side of the body is generally more affected than the other; the features are most curiously twisted and contorted; the articulation is impeded; and these movements are always most severe when the child is watched. If you ask your patient to put out her tongue, she is unable to do so for some moments, but at last suddenly thrusts it out, and as suddenly withdraws it. If you tell her to walk, she advances in a jumping manner, by fits and starts, dragging her leg rather than lifting it, and alternately halting and hopping. She cannot even sit still; her shoulders writhe about, she picks her dress, and shuffles and scrapes the floor with her feet. During sleep, these irregular actions usually cease. When the disease lasts long, the countenance assumes a vacant appearance bordering on fatuity, and some imbecility of mind becomes manifest.

Chorea may last from one week to several months; the average duration is probably five or six weeks. It is often complicated with hysteria; and it has been observed to

happen in conjunction with, or on the termination of, rheumatic fever, and rheumatic inflammation of the heart. Although most common in girls, yet boys not unfrequently suffer from it.

The *treatment* consists in regulating the bowels, subduing irritation, and strengthening the system. For this purpose, the employment of cathartics of a stimulating nature is necessary, such as calomel and jalap, or, where worms are suspected, the oil of turpentine. A combination of tonic or antispasmodic medicines with purgatives, is often found to be serviceable. The two great remedies, however, are the cold shower, or douche bath, and iron. As regards the former, it should be employed every morning on the patient's rising; with respect to the latter, different preparations have been recommended. Perhaps the best is the carbonate of iron, given in doses varying from half a drachm to two drachms, mixed with molasses. The sulphate or the tincture of iron may, however, be used almost as advantageously. The diet must be nutritious, exercise in the fresh air freely allowed, and mental excitement guarded against.

FUNCTIONAL DERANGEMENTS OF THE SPINAL MARROW.

When it is considered that from the spinal centres probably flows an influence which is requisite to sustain the various organic functions in their healthy condition, it can be readily understood that a great diversity of derangement in these functions may result from deficient, excessive, or perverted action in the centres, without the necessary existence of any organic disease. It is, indeed, highly probable that many disorders of the digestive, respiratory, and circulatory organs, many derangements of the secretory and nutritive processes, of which the causes are obscure, might be traced to the spinal marrow as their source, had we the means of investigating accurately the functional disorders of that structure. But, in the present state of our knowledge, such a reference must be conjectural, except in those cases in which some direct evidence exists of spinal disturbance. Still, even a conjectural reference

may lead to useful results; and remedies may often be advantageously addressed to the spine, when no other proof of disorder in the cord is offered than morbid phenomena of the organs over which it presides. It is, indeed, a good practical rule, in all those cases of functional disease in any part of the body supplied with spinal nerves, of which the cause is obscure, to bear in mind their possible origin in the medulla spinalis, and to be prepared, should other measures fail, to have recourse to such as may be calculated especially to alter the condition of that portion of the nervous system.

But, while it is probable that much disorder may depend on the spinal marrow, which cannot be clearly traced to it, there are numerous instances in which that structure affords direct evidence of a diseased condition, and thus enables us to refer various morbid phenomena existing elsewhere, with great confidence, to their true origin. The evidence of functional spinal disorder above alluded to is that offered by tenderness upon pressure on the spinous processes, when there is no reason to suspect the existence of spinal meningitis or myelitis. This symptom has been so frequently found associated with various disorders in different parts of the system, which have yielded to remedies addressed to the seat of it, that it has come to be regarded as the characteristic sign of a peculiar affection, which for want of a better name is generally denominated *spinal irritation*. The remainder of this article will be devoted especially to the consideration of that affection.

SPINAL IRRITATION.

Symptoms.—These are immensely diversified. They are, indeed, almost as numerous as the possible derangements of function in all parts of the body, supplied with nerves from the spinal marrow. The only symptom common to all the cases is the tenderness on pressure. Upon making pressure on the spinous processes, beginning at the neck and proceeding downward, we may find either a general tenderness along the whole or the greater portion of the column, or, what is much more common, it may be confined

to one or a very few of the vertebræ; and, not unfrequently, one is more acutely sensitive, while above and below the tenderness gradually diminishes until it ceases to be evident. The dorsal vertebræ are most frequently affected. There is not less difference in the degree of tenderness than in its precise seat. In some instances it is slight, requiring rather heavy pressure to develop it; in others it is exquisitely keen, so that a touch produces uneasiness, and the slightest pressure occasions intolerable pain. A remarkable circumstance is, that in the greater number of cases there is little or no pain in the affected portion of the spine except when pressure is made, so that the real seat of disease might escape notice were not attention directed towards it by symptoms existing elsewhere.

I shall not pretend to enumerate all these symptoms, but shall content myself with calling attention to some of the more prominent. They vary with the portion of the spine affected; those parts especially showing signs of disorder which receive nerves directly or indirectly from the vicinity of the tender vertebræ.

There is scarcely a single morbid sensation or perversion of function occurring in any part of the body beneath the head which may not originate in spinal irritation; and in all cases in which the cause of any existing disorder of this kind is obscure, it should be sought for in the spine.

The affection not unfrequently attends other diseases. It is very common in hysteria, so much so as to be almost characteristic of that complaint. It also occasionally attends chorea and epilepsy. There is reason to believe that some cases resembling tetanus and hydrophobia, and which have been mistaken for these complaints, have depended upon this kind of spinal irritation.

Causes.—These are not well understood. The disease occurs most frequently in women, and especially during the menstrual period, or between the ages of fourteen and forty-five. It would seem, therefore, to have some connection with the uterus; but such a connection is certainly not essential, for the disease often occurs in children and in men. Spinal distortion seems also to constitute a predis-

position. Of the exciting causes, changes in the weather are probably among the most frequent. Mental disturbance appears to be capable of inducing it, and perhaps any other cause calculated strongly to impress the nervous system.

Treatment.—If the disease is recent, nothing more will commonly be necessary than an application of the chloroform liniment to the part affected; if bathing with it should not prove sufficient, a flannel should be saturated with it, and applied to the part most affected. In cases of long standing it is often necessary to blister repeatedly with Spanish flies. The internal treatment should be the same as for dyspepsia.

TETANUS—LOCKED JAW.

Tetanus is a disease in which the muscles are in a state of rigid lasting contraction, with paroxysms of brief and painful spasm, alternating with irregular intervals of more or less complete relaxation, without coma, or any essential disturbance of the mental faculties.

Different names have been conferred upon the tetanic condition, according to the obvious effects of the spasm. Thus, when it produces a closure of the jaws, the affection has been denominated *trismus;* when a curvature of the body backward, *opisthotonos;* when forward, *emprosthotonos;* when to one side, *pleurosthotonos.* These conditions are now treated as mere symptomatic diversities of the same disease.

Tetanus has been divided into the *idiopathic* and *symptomatic:* the former, independent of any other known pathological condition; the latter, produced by some other distinct affection existing within or without the spine. The symptomatic variety, when originating in wounds or other external injury, is called *traumatic tetanus.* This latter name, as embracing cases of very frequent occurrence, of a certain identity of origin, and peculiar violence of character, is very convenient, and almost universally employed. As to the disease from other sources, there is always much uncertainty; some ascribing it to one condition, others to another, and all acknowledging its obscurity; there is a

propriety in adopting some designation which, whether in itself correct or incorrect, may be generally received and understood. Most writers at present include under the title of *idiopathic tetanus* all cases not *traumatic*, whether strictly independent, or symptomatic of some other affection; and their example is followed in this work.

Symptoms, Course, etc.—The first signs of a commencing attack are commonly feelings of uneasiness and stiffness in the back of the neck; an unusual rigidity about the jaws, with some pain in attempting to open the mouth widely; and occasionally a disagreeable sensation in the throat, and slight embarrassment in swallowing. There is also frequently uneasiness in the epigastrium, which soon amounts to acute pain, shooting from the pit of the stomach towards the spine, and attended with a sensation of stricture or dragging, dependent, no doubt, upon spasm of the diaphragm. Other muscles become quickly involved, especially those of the face and trunk; the disease then extends to the limbs; and ultimately almost all the voluntary muscles of the body are more or less affected.

There is a permanent rigidity or tonic spasm of the muscles, which exists in various degrees throughout the complaint, seldom undergoing complete relaxation. Slight at the commencement, it increases with the advance of the disease, and, when this is fully formed, imparts a degree of hardness to the muscles almost like that of a board. But besides this state of permanent rigidity, there are paroxysms of spasms approaching to the clonic character, which are much shorter, but proportionably more violent, and alternate with periods of comparative relaxation. These paroxysms are at first slight, and at somewhat distant intervals; but gradually increase in frequency and violence, until at length they occur every ten or fifteen minutes, or even more frequently, so that the patient is scarcely out of one before he falls into another; and their force is such that they sometimes throw the whole body about in different directions, and endanger injury from this cause.

The slightest causes are often sufficient to induce a

paroxysm, such as an attempt to speak or to swallow, any sudden noise, a draught of cold air, etc.

Causes.—A peculiar predisposition is probably requisite, in general, to the production of tetanus, as comparatively few are attacked of those exposed to the exciting causes, though these may be to all appearance similar. In what this predisposition consists is unknown. That a long-continued prevalence of heat favors its production is highly probable; for the disease is incomparably more frequent between the tropics than in cold or temperate latitudes; and, in varying climates, is more apt to occur during the hot than the cold seasons.

It has been supposed that a depraved state of health, resulting from bad diet, vitiated air, and a residence in low, damp situations, sometimes constitutes a predisposition; and yet the traumatic form of the disease often occurs in the young, robust, and vigorous.

Males are much more frequently and severely affected than females. This, no doubt, arises in part from the much greater exposure of the former to wounds and other exciting causes; yet there is probably a constitutional difference in the two sexes, in relation to nervous disease, corresponding in some measure with their respective physical energies; women being more liable to the mild affections of hysteria and chorea, while men suffer more from apoplexy and tetanus.

Persons are most subject to the disease between the ages of ten and fifty; but no age is exempt. It is rare in advanced life. As already stated, infants soon after birth often suffer from it.

It appears to be a well-ascertained fact that the negro is more disposed to tetanus than the white. Some have ascribed the difference to the greater exposure and worse living of the former; but, under apparently the same circumstances, negroes have appeared to suffer most.

Of the *exciting causes*, incomparably the most frequent, in cold and temperate countries, are wounds or other kinds of external violence. Whether the wound is trifling or

severe seems to be of little consequence. The slightest scratch will sometimes cause the disease, the most severe injury often fails to do so. As examples of the kind of wounds which have given rise to tetanus, may be mentioned those produced by needles in the fingers, a splinter under the nail, the extraction of a tooth, a fishbone in the fauces, the insertion of artificial teeth, the cutting of corns, running nails in the feet, the insertion of a seton, cupping, fractures and dislocations, contusing and lacerating bodies, and all kinds of surgical operations. It is believed that lacerated and punctured wounds are worse in this respect than smooth cuts, and injuries of the fingers, soles of the feet, and joints, than wounds elsewhere. The interval between the reception of the wound and the occurrence of tetanus is very uncertain. According to the statements of authors, it may be a few minutes, a few hours, several days, or even weeks. Most commonly the attack comes on between the fourth and fourteenth day after the injury. If it should not supervene before the end of three weeks, the patient may be considered safe. The longer the interval, the milder generally is the attack said to be, and the more likely to end in recovery. The disease is thought to occur less frequently than formerly, in consequence of the greater care extended to the wounded, and the greater skill exhibited in their treatment. Soldiers wounded in battle are said to be more apt to suffer than those wounded in civil life, because so often exposed to cold, wet, and privations, after their injuries, and often so badly cared for from the want of suitable surgical assistance.

Other local irritation besides that of wounds may occasion the disease. Thus, it is thought to have arisen from swollen gums, ulcers, intestinal worms, calculi in the bladder, etc. Violent mental emotion, especially terror, has been accused of producing tetanus; and Dr. Rush relates a case in which it was ascribed to harsh grating sounds. Strychnine in poisonous quantities produces effects which cannot be distinguished from tetanus. But infinitely the most common cause of that variety of tetanus which is independent of wounds, and is here denominated idiopathic, is expo-

sure to cold when the body has been hot and perspiring. Sleeping out upon the damp ground is a frequent cause of it; and the use of a cold bath when perspiring, and of very cold water as a drink under similar circumstances, are said to have produced it. Exposure of this kind is the most frequent cause of the disease in tropical countries. It is apt to come on within a few hours after the exposure. When arising from this cause, the disease is more apt to be chronic and curable than when from wounds. The occurrence of traumatic tetanus is much favored by the coöperation of cold, and other causes of irritation; and it is probable that the two causes together may give rise to the disease, when neither separately would have been sufficient to produce it.

Prognosis.—Traumatic tetanus is exceedingly fatal. Some who have seen much of the disease assert that they have scarcely known of a case of recovery. The most successful report but a small proportion of cures. The journals, however, teem with cases which have ended favorably under one or another kind of treatment; and, though some allowance must be made for the probable idiopathic character of some of the cases considered as traumatic, yet there can be little doubt of the accuracy of the statements in the greater number; and sufficient encouragement is offered to the practitioner to persevere in an energetic use of means which he may consider as indicated. The means of determining the general ratio of cures are altogether wanting; for it is not the custom to report unsuccessful cases.

The idiopathic form of the disease is much less fatal; and, as it occurs in temperate latitudes, is generally curable.

It is highly probable that the milder cases of tetanus, whether traumatic or idiopathic, would sometimes end spontaneously in health; so that caution is always necessary, in judging of the effects of remedies, not to confound them with the workings of nature.

Favorable circumstances are original mildness of the symptoms, complete relaxation between the spasmodic paroxysms, the absence of any great embarrassment of the respiration, a natural state of the circulation, the occurrence

of sleep under the influence of remedies, and the protraction of the case beyond the seventh day. Extreme severity of the paroxysms, uninterrupted rigidity of many of the muscles, great difficulty of deglutition and respiration, an apparent tendency to spasm of the glottis, insusceptibility to the action of powerful remedies, and a very feeble, frequent, and irregular pulse, are symptoms of very bad augury.

Treatment.—One who depends upon authority alone would find extreme difficulty in coming to any satisfactory conclusion as to the treatment of this disease; for occasional, and perhaps equal, success is claimed for apparently the most opposite plans of management; and a very numerous list of remedies has been employed, each one of which is reported to have produced signal cures. But the fact appears to be that the disease occasionally gets well of itself, and the credit is given to some medicine, or combination of medicines, which may have been employed, though possibly without the least influence over the result. In my own experience—and I have attended quite a number of cases, two-thirds of which got well—I have found nothing appear to be of much benefit except large doses of opium, and blisters to the spine. The opium should be given in such quantity as will prevent the spasms, and then repeated, so as to steadily keep the system under its influence for a number of days. The blister should be applied to the whole length of the spine; and, after poulticing, the cuticle should be removed, and then kept running by applying cloths dipped in strong soapsuds. The bowels must be daily moved by castor oil aided by large injections of soapsuds. Whenever the pulse is feeble, no matter what may be the stage of the disease, cordial medicines and nutritious food should be employed. Wine and the different forms of ardent spirit, milk, animal broths, the yolk of egg, etc., should be freely used. Sulphate of quinia may be administered with the same view.

In consequence of the closure of the jaws, there is occasionally some difficulty in introducing food; but a vacancy can generally be found, either from the loss of a tooth, or behind the last teeth, large enough for the admission of

liquids. A greater difficulty is that often attendant upon deglutition. To obviate this, it may be necessary to inject food into the stomach through a tube, or to attempt to supply the place of food by nutritious enemata.

HYDROPHOBIA—RABIES—CANINE MADNESS.

Hydrophobia is a peculiar disease, resulting from the entrance into the system of the poison of a rabid animal. The poison is almost always received through a wound, generally the bite of the animal. This heals like any other wound, and for some time no peculiar or constitutional effects are experienced. It is seldom that the first symptoms of the disease make their appearance before the twentieth day after the injury.

Symptoms, Course, etc.—The first warning of the approaching attack is frequently a feeling of pain in or near the seat of the wound, extending towards the trunk. If not acute pain, there is some unusual sensation, such as aching, tingling, burning, coldness, numbness, or stiffness in the cicatrix, which swells, becomes of a reddish or livid color, sometimes opens, and, if yet unhealed, assumes an unhealthy appearance, and discharges a thin, ichorous fluid instead of pus. Along with these local symptoms, some nervous disturbance is generally experienced; the patient becomes dejected, morose, irritable, restless; light is disagreeable to him; his sleep is troubled; pains are felt in various parts of the body; and signs of digestive disorder are not unfrequent. After the continuance of one or more of these preliminary symptoms for a period varying from a few hours to five or six days, and sometimes without any of them, the patient becomes sensible of a stiffness or stricture about the throat, and, in attempting to swallow, experiences some difficulty, especially in the deglutition of liquids. This may be considered as the commencement of the attack. The difficulty of swallowing rapidly increases, and soon the act becomes impossible, unless with a resolute effort, exciting the most painful spasms in the fauces, and other indescribable sensations, which appear to appall the patient, and cause him to dread the very thought of liquids. Singular nervous par-

oxysms come on. Sensations of stricture or oppression are felt about the throat and chest; the breathing is painful, embarrassed, interrupted with frequent sighs, or a peculiar kind of sobbing movement; there is a sense as of impending suffocation, and of necessity for fresh air; shuddering tremors run through the whole frame, sometimes amounting almost to convulsions; and a fearful expression of anxiety, terror, or despair is depicted on the countenance. The paroxysms are brought on by the slightest causes, and are frequently associated with the attempt to swallow liquids, or with the recollection of the sufferings experienced in former attempts. Hence, any thing which suggests the idea of drinking to the patient will throw him into the most painful agitation and convulsive spasms. The sound of water poured from one vessel into another, the sight of liquids, or of objects which bring them to mind, as of the shining surface of a mirror, a current of cold air, or other cold substance touching the skin, may have this effect.

Another characteristic feature of the disease is a copious secretion of a viscid mucus in the fauces, which the patient spits out with a sort of frantic vehemence and rapidity upon every thing around him, as if the idea of swallowing occasioned by the liquid induced this eager expulsion of it, lest a drop might pass down the throat. This, to a bystander, is sometimes one of the most striking phenomena of the case.

Acute and, as it were, electric shocks of pain are now and then felt in the epigastrium, the back of the neck, and other parts of the spine.

The mind is sometimes calm and collected in the intervals between the paroxysms, and generally the patient retains his consciousness; but in most cases, there is at times more or less mental irregularity, and occasionally spells approaching to insanity come on, which are apparently beyond his control. Not unfrequently, he is aware of the approach of these spells, and, fearful of doing injury to those around him, begs that he may be restrained. The mental aberration is often exhibited in groundless suspicion or apprehension, which is expressed on the face and in the manner of

the patient. Sometimes, on the contrary, he takes a curious fancy to individuals, and lavishes on them marks of fondness and confidence. In comparatively rare instances, he gives way to a wild fury, like that of a savage beast when enraged; roars, howls, curses, strikes at persons near him, rends or breaks every thing within his reach, bites others or himself; till, exhausted at length, he sinks into a gloomy, listless dejection, from which another paroxysm rouses him.

The tongue is usually somewhat furred. There is often burning in the throat, with a thirst which cannot be gratified. Sometimes there is a feeling of hunger, sometimes of nausea with vomiting. The pulse is excited, sufficiently strong at first, but weaker as the complaint advances, and extremely feeble and frequent before its close. The skin is warm or natural in the beginning, but becomes cool in the end, and is often covered with a viscid and offensive sweat. Not unfrequently, paralytic symptoms come on before death.

Remissions of the symptoms sometimes occur in the course of the complaint; during which the patient can drink, though with some difficulty, and can take food. Towards the close, such a remission is not uncommon, with an absence almost complete of the painful symptoms, so that the patient and the physician begin to entertain some hope. But if the pulse is now felt, it is found to be extremely feeble, and sometimes wanting. During this apparent relaxation of the disease, the patient occasionally falls into a sleep, from which he awakes only to die. The closing scene is marked by an excessively feeble or absent pulse, a cold skin, involuntary evacuations, and wandering or delirium; and death approaches either quietly, as a consequence of complete exhaustion, or in strong convulsions.

The disease generally terminates between the second and fifth day, though it sometimes runs on to the seventh, eighth, or ninth.

Causes.—There is one cause, and probably only one, of genuine hydrophobia. Some believe that the disease may originate in man independently of any poison from without; but the cases are extremely rare in which this is supposed

to have occurred; so much so as by their very rarity to excite suspicion as to the accuracy with which they have been reported, or the soundness of the diagnosis. It is very certain that some of the symptoms of hydrophobia are imitated by spontaneous nervous disease. The difficulty of swallowing, and dread of fluids, have often been noticed. Terror has sometimes induced trains of symptoms closely resembling those of the genuine disease. Hysteria also occasionally counterfeits it. But these are comparatively trivial affections, and wholly undeserving of the name of hydrophobia. In the very rare cases which have pursued exactly the course and had the termination of that disease, it is much more probable that the patient may in some way, forgotten or unknown to himself, have received the poison into his system, than that the complaint should have arisen from any other cause.

The poison is contained in the saliva or mucus of the mouth of the rabid animal, and, as before stated, is generally imparted by a bite. It is from the dog that the disease is most frequently received. But many others are capable of imparting it. The cat, fox, badger, wolf, and jackal are known to have communicated the disease. There is good reason to believe that the saliva of the horse, ass, ox, etc., laboring under hydrophobia, will produce the same effect if introduced into the system; but, as these animals do not usually bite, the result does not often actually occur.

Treatment.—The whole magazine of therapeutics has been exhausted, and vainly exhausted, in the treatment of hydrophobia. Remedies the most violent have been used unsparingly; and practitioners have not been deterred by the apparent inertness of any medicament from giving it a full trial. Bleeding in every degree, mercury, opium, and all other cerebral stimulants, tobacco and all other nervous sedatives, the acids and the alkalies, oil of turpentine, cantharides, white hellebore, cevadilla, the salts of lead and those of iron, nitrous oxide inhalations, the injection of warm water and narcotics into the veins, electricity and galvanism, the hot vapor and hot air bath, even the poison of the viper, have all been employed, and with the same sad result.

The practitioner is, therefore, left to his own judgment in the case. I do not pretend to recommend any course of treatment, where I can adduce neither experience nor sound therapeutical principles in its support.

The remedies which promise most are opium and chloroform, and cases have been reported which appeared to have been cured by keeping the system steadily under their influence for many days.

But happily an effectual prophylactic treatment seems to be in our power. To remove completely the nidus of the poison, before the period of incubation is passed, is a measure dictated at once by reason and experience. There is scarcely a case on record, where this measure has been thoroughly carried out at an early period, in which it has not proved successful; every other means of prevention has failed upon trial.

How is the removal of the bitten part to be effected? Certainly, best by the knife. The surface should be thoroughly washed, and the wound itself, as far as practicable, so that not a particle of the loose saliva shall remain. The whole of the wounded surface should then be excised. To give additional security, a stick of lunar caustic should afterwards be thoroughly applied to every part of the cut surface. After this, nothing more than mild dressings are necessary. But there are cases in which this plan cannot be carried into effect. The wound may be so lacerated, or may penetrate parts of such a structure, as to render impossible the complete separation of its surface by the knife. Here, if the limb is small and of little comparative value, amputation may be recommended, as of one of the fingers for example; but when an important member is concerned, the patient should be allowed to choose between the inconvenience of losing his limb, and the chance of losing his life. Should he determine to keep his limb and incur the risk, it should be diminished as much as possible by long-continued, repeated, and thorough washings of the wound by means of a stream of warm water, with the use, in the intervals, of a cupping-glass exhausted by means of a pump. This should be placed over the wound, in the hope

that the poison might be eliminated with the blood. Caustic may then be applied to the surfaces as far as they can be reached.

NEURALGIA.

Neuralgia is a term employed to designate pain of a purely nervous character.

It may be extended so as to embrace all cases of pain, not spasmodic, which cannot be traced directly to vascular congestion, inflammation, or other organic lesion. Some authors appear to be disposed to limit it to certain parts of the body; but the probability is that it may occur wherever there are nerves of general sensation; and even the organs chiefly supplied with nerves from the ganglionic system are capable of the affection, either through the connection of that system with the common sensorium, or through nerves running directly from the organs to the brain.

Symptoms.—The pain is of every possible degree and variety of character; but is generally severe, acute, and more or less darting or lancinating. It is sometimes described as piercing, tearing, screwing, pulsating, aching, burning, tingling, benumbing, etc.; and language has been ransacked to find terms strong enough, and expressive enough, to represent at once its intensity and extreme diversity. Sometimes the paroxysm of pain is preceded by certain warnings, such as epigastric distress, nausea, chilliness or shivering, and a vague feeling of general discomfort. More frequently it approaches without any such premonition, either beginning moderately with a sense of aching, tingling, burning, itching, etc., and gradually increasing till it becomes almost insupportable, or darting at once through the part with its utmost intensity, as it were in electric flashes, which make the muscles even of a strong man quiver as they pass. The paroxysm may consist of a continuous pain, varying in degree, or of a succession of violent twinges, with comparative ease in the intervals. In the latter case, there is often a slight aching, tingling, or sense of numbness between the several shootings of pain;

and the patient sometimes complains of a feeling of coldness scarcely less disagreeable.

The pain may either be confined to the course of a single nerve and its ramifications, or may be diffused without reference to such limits, and sometimes darts rapidly from one point to another, between which there is no immediate nervous communication.

In some instances, there is tenderness of the part, occasionally exquisite tenderness; but more frequently strong pressure, instead of being painful, affords some alleviation; and, what appears very singular, in these very cases of insensibility to forcible impression, a slight touch, the flapping of a handkerchief, for example, will bring on a violent attack; while I have repeatedly known gentle friction with a soft hand to produce complete relief where strong pressure was intolerable.

With the pain there is frequently spasmodic twitching of the neighboring muscles, and sometimes rigid spasm; and the whole frame is occasionally shaken by the ferocious violence of the attack.

In accordance with the general law, that where there is irritation there will be an afflux of blood, the paroxysm is often attended with more or less flushing and vascular turgescence, and occasionally, if the affected part has the power of secretion, with a copious extravasation of liquid, as, for example, of tears when the disease is seated in the eye, and of mucus when in the nostrils; but the exceptions to this rule are numerous, and it not unfrequently happens that the blood-vessels do not exhibit the least sign of participating in the irritation.

The course of the affection is scarcely less diversified than the character of the pain. In one patient the paroxysm is brief, disappearing after a few minutes, or a few hours, not perhaps to return for a considerable time. In another it is much more durable, continuing for days or weeks; but in this case there are always remissions, occurring more or less frequently, and in greater or less degree. Generally these remissions are quite irregular, but some-

times they approach a periodical form, the exacerbation occupying a certain portion of the twenty-four hours, while during the remainder the patient is comparatively comfortable. It not unfrequently happens that the neuralgic attacks are quite intermittent; and, as in the remittent cases, they may be regular or wholly irregular in the recurrence of the paroxysms.

Regular intermittent or periodical neuralgia may be quotidian or tertian, but is much the most frequently, so far as my observation has gone, of the former type. There is no particular time of day at which the paroxysms are peculiarly disposed to recur. They vary much in duration, on some occasions occupying the greater portion, on others but a small portion of the twenty-four hours.

The attacks of neuralgic pain occur less frequently in the sleeping than the waking state, in part because the patient is less exposed to the exciting causes, but chiefly, in all probability, because, in the former state, the brain is less sensible to impression from the disordered nerve.

The pain upon disappearing may do so gradually, leaving occasionally, as it departs, a sense of tingling or formication for a short time behind it; or it may vanish at once and completely, so that the patient passes immediately from a state of torture to one of entire and most delightful relief.

In relation to the condition of system associated with neuralgia, it may be perfectly healthy, or in various degrees debilitated; it may be plethoric, or anemic; and the patient may be subject to rheumatism or gout, or affected with dyspepsia, amenorrhœa, or anomalous nervous disorder of the respiratory, circulatory, and reproductive functions; and all these abnormal conditions may have some bearing on the complaint.

The duration of the disease is quite indefinite. The patient may have only one attack, which may last more or less continuously for minutes, hours, days, weeks, or months; or he may be liable to recurring attacks for a number of years, or during his whole life. It is seldom, however, that the disease occurs but once. Much more frequently the patient continues more or less subject to it

so long as he lives. In the latter case, the recurring attacks may be distant, comparatively mild, or in a greater or less degree under the control of remedies; or they may increase in duration, violence, and frequency, until at length the patient scarcely experiences any exemption, and life becomes a protracted torture. Death very seldom occurs directly from neuralgia; but it may by its severity and persistence so far undermine the health, as to prove indirectly fatal by causing the system to sink under diseases which it might otherwise surmount. In some instances, death is welcomed as an escape from insupportable misery, and it has not unfrequently happened that relief has been sought in suicide.

Seats of Neuralgia.—It has been already stated, that the disease may attack any part of the body where there are nerves. But all parts are not equally susceptible; and in certain positions it is so common, or so peculiar, as to have received distinct designations. The neuralgic affections of various internal organs have been noticed, in previous parts of this work, in connection with other diseases of the same parts; as of the heart, under the name of *angina pectoris;* of the stomach, under that of *gastralgia;* of the intestines, under that of *neuralgic colic;* and of the urinary organs, under that of *nephralgia.* It has been noticed also as occurring in the encephalon, and in the liver. At present I wish merely to call attention to some of its more prominent external seats. It sometimes appears to affect the skin exclusively, but is more frequently seated in the subcutaneous nerves; and though occasionally deep-seated, shows in most instances a tendency to the more superficial ramifications.

Perhaps in no part of the body does the affection occur so often as in the head. In the scalp it may be confined to one limited spot, or may extend over one-half of its surface. In the latter case, it is denominated *hemicrania.* The affection which goes by that name is probably sometimes cerebral, and appears to be connected with the stomach, as one of the forms of sick-headache. But it is often, and perhaps most frequently, nothing more than neuralgia of the scalp. When of this character, it is exceedingly painful,

and sometimes of considerable duration. I have known it almost incessant for several weeks. In the face, the disease in its more violent forms has been called *tic douloureux*. It may affect more especially certain regions of the face, as the neighborhood of the eye; the temporal region; the cheek, lips, etc.; or it may shoot from one part to the other, as if proceeding from some common source. It is not unfrequent in and about the eye, producing redness of the lids and of the conjunctiva, occasionally swelling of the external parts, and a copious flow of tears. Sometimes the eyeball is peculiarly affected; and then there is excessive susceptibility of the organ, so that the least ray of light produces exquisite pain; and I have known patients to complain of intense and painful brightness, though the shutters were closed, and the apartment perfectly dark to ordinary vision. This painful sensibility of the eye may be acute and temporary, or chronic, and in the latter case sometimes continues for many years, bidding defiance to all kinds of treatment. When the disease attacks the jaws, it produces one of the most painful varieties of toothache. (*See* NERVOUS OR NEURALGIC TOOTHACHE.) The tongue, the fauces, and the mucous membrane of the nostrils are liable to be severely affected. In the throat, the disease sometimes imitates angina, and in the nostrils coryza. *Otalgia* or *earache* is another form of it. This is apt to occur in children, and is often exquisitely painful. It may be confined to the ear, or may radiate to the temples and the cheeks; and is usually accompanied with some perversion of hearing, as excessive sensitiveness, partial deafness, or unnatural sounds.

The disease is not common in the neck. In the upper extremities, though it may occur in any part, it seizes preferably upon the forearm.

Neuralgia occurs in different parts of the trunk. It is not uncommon in the intercostal spaces, and in the lumbar region. In the walls of the chest, it is said to occur most frequently between the sixth and ninth ribs, on the left side, and especially in females, in connection with menstrual disorder. In the female mamma it is sometimes very violent.

When originating in the small of the back, it occasionally shoots forward and downward to the groin, and into the scrotum and labia pudendi. The anus and the genitals in both sexes are sometimes affected with great severity.

Next to the head, the lower extremities are probably most frequently attacked. The disease sometimes pursues the course of the crural or femoral nerve, along the inner and anterior part of the thigh and leg, down to the top of the foot. But much more frequently it occupies the sciatic nerve or its branches, constituting a variety of the affection so well known under the name of *sciatica*, and so notorious for its obstinacy. This is characterized by irregular pains about the hip, spreading thence into neighboring parts, and extending downward upon the outside and back of the thigh to the leg and foot; or the pains may begin below and shoot upwards; or they may occupy distinct and isolated spots in this long course, sometimes in one part of the limb, and sometimes in another, as the knee-joint, the calf of the leg, and the sole of the foot. I have known neuralgia to be exceedingly violent and obstinate in the knee, imitating inflammation of the joint, though more painful, and, after a long and ineffectual antiphlogistic treatment, including confinement to bed, yielding at length completely to the subcarbonate of iron and narcotics.

There can be no doubt that neuralgia is the consequence of a certain condition of the nervous centre from which the nerves supplying the seat of pain originate; but what that condition is we are wholly ignorant of: the best we can do is to point out the usual causes which produce this condition. These are predisposing or exciting. To the former belong such causes as induce a debilitated state of system, or any other of those derangements which have been enumerated as occasional sources of the affection. Among these may be mentioned, as peculiarly operative, all kinds of exhausting excesses, and especially those having reference to the sexual propensities. The nervous temperament is supposed to predispose to neuralgia. It is doubtful whether sex has any special influence. There are peculiarities in the female constitution which predispose it to certain

forms of neuralgic disease, especially those of a rheumatic or gouty nature, or having their seat in the spine; but these are probably balanced by the greater liability of men to the complaint from fatigue, exposure, and intemperance of all kinds.

Of the exciting causes, the most frequent is probably cold. Exposure to a keen cold air is very apt to bring on the neuralgic paroxysm; and cold and wet conjoined are still more effectual. Fatigue, strong mental emotion, excesses of the table, intemperate drinking, the abuse of tea, coffee, and tobacco, retrocession of gout and rheumatism, and the sudden removal of cutaneous eruptions, are exciting causes.

Treatment.—A vast diversity of remedies have been used in the treatment of neuralgia, and most of them with some apparent success. Being a purely nervous affection, it might be expected to be influenced by means calculated to make an impression on the mind. The brain, when strongly preöccupied, is less sensible to disturbing causes of all kinds; and by directing the current of nervous excitement from the seat of disease towards that of intellect and emotion, a powerful revulsive influence is exercised. Engage therefore the faith, the fears, the wishes, the attention, or any other mental function of the patient strongly, and relief will be apt to follow. Hence the occasional efficacy of metallic tractors, of magnetized rings, of homœopathic pills, and of numberless scarcely less inert applications, in the relief of neuralgia. An illustration familiar to every one is the temporary cure of toothache upon the approach of the dentist. Even really efficacious means are frequently very much aided by the coöperation of mental influence; and the physician who can most strongly bring this influence to bear upon the case will be most likely to obtain at least temporary success. I shall not pretend to enumerate all the remedies which have been recommended in this complaint; but shall be content with stating the principles upon which it appears to me that it should be treated, and the measures that have real efficacy, or considerable pretension.

In the first place, we should ascertain if any local irritation, or any functional derangement of any of the organs which might serve as a source of irritation, when sent to the nervous centre, might get up the peculiar condition spoken of; and, if so, the remedies calculated to relieve this functional derangement, or to remove local irritation, should at once be resorted to.

Neuralgia is often intermittent, and, when not so at first, often becomes so. We should always be on the watch for this state of the disease; as, by availing ourselves of the power of anti-periodical remedies, we will almost invariably be able to arrest it. I do not think I have ever failed in curing regular intermittent neuralgia, of the quotidian or tertian character, by means of sulphate of quinia, with the aid of chloroform liniment applied to the seat of the pain, and also to the spine. In general, moderate doses of this medicine will answer, say from ten to twenty grains between the paroxysms; but if these should not succeed, the quantity should be augmented to half a drachm, or a drachm, if necessary. Cases which refuse to yield to the smaller quantity will sometimes immediately give way to the larger. These remedies will often also succeed in the regularly remittent variety; and sometimes, after failure at the commencement, will answer the purpose effectually, if tried at a later period. Occasionally a case of neuralgia, commencing in an irregularly continuous form, may be brought to the remittent or intermittent form by treatment addressed to the state of the system.

The other means calculated to interrupt periodical diseases will, no doubt, also occasionally succeed, such as an emetic, large doses of opium, a blister, etc., employed in anticipation of the paroxysm. For a more particular account of these, the reader is referred to the subject of intermittent fever.

But we are not without remedies for pure, uncomplicated neuralgia, not periodical in its character. So far as my experience has gone, the most effectual of these is subcarbonate of iron, given in connection with the fever syrup. The

subcarbonate should be administered in large doses, from half a drachm to a drachm, or even two drachms, in a tablespoonful of the syrup, three times a day.

In cases originating in a syphilitic or scrofulous taint of the system, the following formula has proved very successful: Fever syrup and comp. syrup of sarsaparilla, each four ounces; iodide of potassa, half an ounce: dose, a dessertspoonful after each meal.

Oil of turpentine is another alterative remedy which has occasionally proved useful, especially in cases connected with the sciatic nerve. It should be given in the dose of half a teaspoonful, three times a day.

Local Remedies.—The local treatment of neuralgia is important. Much may be done in this way to afford relief to the patient. The chloroform liniment I place at the head of the list; but besides this, there are others which may be used with much advantage. *Laudanum* may be applied by lotion, or in the form of a cataplasm, care being taken to guard against injurious effects from its absorption if the cuticle should be broken. The liquid preparations of *opium* and *camphor* may sometimes be usefully combined. The *strong tincture of aconite* is highly recommended. It should be rubbed upon the part till it produces its tingling and benumbing effect. *Aconitin* mixed with lard, in the form of ointment, in the proportion of one or two grains to a drachm, has been greatly lauded; but it is expensive, and probably in no degree superior to the tincture. Ointments made with the extracts of *stramonium* and *belladonna* may also be applied by friction. A *belladonna plaster* is sometimes undoubtedly beneficial. *Tobacco cataplasms* may be used occasionally with great benefit; but their depressing effect, when too freely or too long applied, should be borne in mind.

When the pains affect the anus, uterus, urinary organs, or neighboring parts, the anodyne remedy may be most efficiently employed in the form of enema. Laudanum, under such circumstances, affords usually very speedy relief.

The endermic method of application is sometimes also

highly useful. A small blister may be made in the near vicinity of the pain, the cuticle removed, and half a grain of powdered sulphate of morphia sprinkled upon the surface.

Ice or *ice-cold water* has been recommended as a local application, and occasionally affords relief. The same may be said of *steaming with hot vapor*, or the employment of the *hot douche*. Covering the part with *oiled silk*, and then keeping it warm by a layer of carded wool, probably operates usefully in the same mode as the local vapor bath. *Dry heat*, applied by means of burning coals near the part, and continued as long as the patient can well bear it, is another mode of obtaining ease that should be resorted to. I have frequently known relief obtained in a few minutes when the pain was in the hips, or the lower end of the back-bone, or the anus, by sitting on a heated board.

Rubefacients, such as oil of turpentine, cayenne pepper, and tincture of cantharides; repeated *blistering* over tender points that may be discovered near the seat of pain; *revulsions* by means of setons; the use of *electricity*, *galvanism*, and *electro-magnetism;* are all measures which have strong testimony in their favor, and which undoubtedly often produce a favorable impression upon the disease.

Indeed, any thing which for the time modifies the nervous condition of the part may occasionally afford temporary relief; and I have never known more speedy effects from any remedy, than I have sometimes witnessed from *gentle friction* with a soft hand upon the surface.

In a disease so painful, often so obstinate, and so lasting; and in one, too, so much temporarily under the influence of the imagination, it is highly desirable that we should have at command an inexhaustible fund of remedies, so that we may vary our means to suit the circumstances of the case. But there is one rule which we should never forget: that, while skirmishing with the lighter auxiliary measures, we should not be induced too hastily to relinquish the really efficient and curative means which we may have brought to bear on the disease.

After having employed all the resources of the materia medica, there yet remain measures which promise most

favorably, and which sometimes succeed in apparently desperate cases. The nervous system has, in some instances, been so long accustomed to the neuralgic affection, that pain has become its natural mode of action—the condition into which it spontaneously falls whenever remedial impressions are for a moment removed. It now becomes important to change entirely the circumstances under which the patient may be placed, to habituate his nervous system to new influences, and to sustain the novel impression until the system shall have forgotten the old altogether. Such an effect occasionally results from a dangerous and protracted disease, from which the patient emerges, created as it were anew. A safer and more agreeable mode of accomplishing the same end is to send him into a foreign country, to be absent at least a year, and if practicable several years; or upon protracted voyages, the longer the better; or, if neither of these objects be attainable, to change completely his mode of life at home. No remedy within my observation has been so effectual in obstinate neuralgia as a journey to Europe, and a residence abroad for a year or more, amidst the exciting novelties, and the various incidents, pleasing or otherwise, belonging to foreign travel. I have no doubt, moreover, that the course of life pursued at the hydropathic institutions may sometimes strongly cooperate with such influences in revolutionizing the nervous system. But such a powerful instrument should not be rashly employed, nor without due medical advice.

DISEASES OF THE SKIN.

A MULTITUDE of skin diseases are described by systematic writers; many of which, however, are so trifling as not to require treatment, and others being unknown in this country, the reader will not be troubled with their description: only such as occasion annoyance, either by the suffering they cause or their unsightly appearance, will be treated of in this work.

The cutaneous diseases may be arranged in the classes

of—1. Rashes; 2. Pimples; 3. Vesicles, including bullæ, 4. Pustules; 5. Scales; and, 6. Tubercles.

Rashes are characterized by a red, superficial efflorescence, diffused or in patches, disappearing under pressure, and commonly ending in desquamation, [scaling off.]

Pimples (papulæ) are small, somewhat conical elevations, pointed at the top, containing neither lymph nor pus, and ending usually in a scurf.

Vesicles (vesiculæ) are circumscribed elevations of the cuticle, containing lymph either limpid and colorless, or more or less opaque, and whitish or pearl-colored. When large, and consisting of a clear fluid separating the cuticle from the true skin, they are called bullæ, blebs, or small blisters.

Pustules (pustulæ) are circumscribed elevations of the cuticle, containing pus. Willan and Bateman make four varieties, viz.: 1. *Phlyzacium*, [blisters,] large, on a hard circular base of a vivid red color, and followed by a thick, hard, dark scab. 2. *Psydracium*, [hard elevations,] small, often irregularly circumscribed, but slightly elevated, terminating in a laminated scab, often clustering and confluent, and, after the discharge of pus, pouring out a thin watery humor, which frequently forms an irregular incrustation. 3. *Achor*, [bran,] small, pointed, containing a straw-colored matter of the appearance and nearly the consistence of strained honey, and succeeded by a thin, brown or yellowish scab; and, 4. *Favus*, [honeycomb,] containing a more viscid matter than achor, with a frequently irregular and slightly inflamed base, and ending in a yellow, semi-transparent, and sometimes cellular scab, like a honeycomb.

Scales (squamæ) are hard, thickened, whitish, opaque laminæ of cuticle.

Tubercles (tubercula) are small, hard, superficial, circumscribed tumors, permanent or partially suppurating. These must not be confounded with the scrofulous or consumptive tubercles.

It is important that the reader should bear in mind that the nosological divisions of cutaneous diseases are more or less abstractions. They will not by any means always be found in nature of the same precise and definite character which is given them in the books; and then the treatment

of most of them, is so nearly the same that it is not thought best to trouble the reader with more than the name of each variety and any thing special with regard to its treatment, and refer him to the treatment common to all.

RASHES.

To this division belong Scarlatina, Rubeola, Erysipelas, Roseola, Erythema, and Urticaria. The first three have been already treated of, and we will only here speak of the three latter varieties.

ERYTHEMA.

This eruption is characterized by superficial redness, generally in irregular patches, and most commonly confined to those parts which rub against each other, as the arm-pits, between the nates, and thighs, and in folds of the neck, in fat babies, and is well known by nurses by the name of *chafe*. Sometimes it appears to be constitutional, and may appear on any part of the body. It often attends other diseases, as fevers, bowel complaints, etc. It usually appears in patches, by which means it may be distinguished from roseola, which it often very much resembles.

The *treatment* will consist in removing the cause, and sponging the part with a weak solution of sugar of lead, or whisky and water. When it is a *chafe*, it should be sponged frequently with alum water to harden the skin.

SCARLET RASH, OR ROSEOLA.

This is described as a rose-colored efflorescence, without wheals or pimples, and not contagious. But I have seen as much evidence of contagion in this disease as in scarlet fever, which it very often accompanies. It is, however, very distinct from scarlatina, is not, as some suppose, a mild form of that disease, but has a history of its own.

It requires very little treatment, keeping within doors, a light diet for a few days, and dusting the surface with wheat flour being sufficient.

NETTLE RASH, OR URTICARIA.

This is a non-contagious disease, appearing in elevations of the skin called wheals. It is attended with a good deal of burning or itching, like the sting of the common nettle, and is sometimes ushered in by fever and constitutional disturbance. It is most commonly caused by the presence of some other disease, as teething, disordered stomach or bowels; but is often the direct effect of fatigue, exposure to cold, violent passions, etc., and frequently caused by some article of food which disagrees with the stomach. A notice of this disease is chiefly important, because of the alarm which it often occasions.

In many acute cases the first symptoms are quite severe, and lead to much alarm in the patient or friends. But as it is never a dangerous disease, or the cause of any other serious disturbance, it is only necessary that the reader should be able to discriminate between this and other disorders of the surface. This is easily done, as no other eruption presents a similar appearance; it is enough to say that there is no pimple, or vesicle, or tendency to point, but a simple elevation, irregular in form, presenting the general characteristics of a bite or sting of an insect, but differing in that it presents a more irregular form, and will apparently subside and then return, in a short time, in full force again.

The treatment in the acute variety is very simple. Bathe the surface with tepid water, in which some common soda has been dissolved, and then dust it with flour or starch; and if there be fever, give the saline mixture; avoid exposure to cold, or cold applications, as it may cause retrocession (striking in) and occasion very serious effects. If the disease be thought to arise from worms, or other offending matter in the stomach or bowels, it should be treated accordingly; if from teething, the gums should be scarified, etc. In the chronic form, it is often rather stubborn, frequently returning after it has been apparently cured; the iodide of potash should be given, and strict scrutiny made to ascertain if any article of diet occasions it, desisting from

the use of one article after another, until the offending one be ascertained. If the disease, either in the acute or chronic form, be intermittent, quinine, or some other anti-periodic, should be given.

PAPULÆ, OR PIMPLES.

Many varieties of this disease are given by authors, only two of which will be here considered, the others being treated of under other heads, or being too insignificant to warrant a description.

LICHEN—TETTER.

The simplest form of this disease is that which occurs in very warm weather, known as *heat*, or *prickly heat*. It most usually appears on those parts of the body which are most exposed, as the breast, arms, or legs; hence mothers often make a mistake by leaving their babies nearly naked in order to prevent its spread; a light covering of the surface is the best protection against it. This form of *lichen* is so common and so easily recognized that I will not occupy space with its description, and very little need be said as to its cure, though, at times, it becomes very annoying, and may lead to serious results by a sudden *striking in;* it is enough, however, to say that the surface should be often sponged with tepid water in which either soda or lime has been dissolved; and if the complaint proves stubborn, sponge it every evening with an infusion of hops in common table tea, to which may be added a few drops of oil of sassafras.

If by imprudent exposure the eruption suddenly disappears, and causes distress of any kind, the child should be bathed in water as hot as it can be borne, and then the seat of the eruption covered by a plaster made by mixing one part of flour of mustard, with three parts of wheat flour, and making it into a paste by adding molasses. Of this strength the mustard can be borne, and will gently stimulate the surface, so as to remedy the effect of the retrocession.

Sometimes *lichen* assumes a more circumscribed form, appearing in patches, or in the form of *wheals;* hence has

been called *lichen urticatus*. This variety causes more distress, and is more stubborn than the former, and requires more active treatment. The saline mixture should be given daily, so as to keep the blood cool; but if the system should be, or come to be, below par, then tonics should be given, as quinine, iron, the vegetable bitters, etc. A lotion made by adding equal parts of oil of sassafras, laudanum, and glycerine, together, will, I think, always cure it. In this composition the sassafras kills the disease, the laudanum allays the irritation, and the glycerine protects the surface from the action of the atmosphere, but caution must be observed lest the laudanum should narcotize the patient.

PRURIGO, OR ITCHING TETTER.

In deference to authority I have given this disease a distinct heading, but for all practical purposes it may be properly considered a mere variety of *lichen*. In this form, however, it remains more persistently in the same place, causes less redness of the surface, but more intense itching, so that by violent rubbing or scratching the skin often becomes abraded, and a sticky exudation is thrown out, which on drying causes scurf or scabs.

This is always a chronic disease, unattended with fever, and rarely disturbs the general health, and, like *lichen*, is not contagious. It may be treated as is directed in the former disease, except that, being more local and more stubborn, it may require more active local applications. If what is directed for *lichen* should fail, then use the following:

To four ounces of proof spirit add ten grains of corrosive sublimate and one *drachm* (a tea-spoonful) of oil of sassafras; apply night and morning, and every other day wash with castile soap-suds, and apply the lotion immediately after. This preparation will effectually destroy the animalculæ which usually infest the skin in this disease and are thought by many to produce it.

VESICULAR DISEASES.

There are many varieties of vesicular diseases, all of which are characterized by minute vesicles, which secrete a

pungent acrid humor, which causes a burning, smarting, or itching sensation, and are all thought to be contagious.

HERPES—CREEPING ERUPTION.

This is a vesicular eruption which occurs in circumscribed patches, upon an inflamed base, surrounded by a circle of inflamed surface, leaving a space of sound skin between them. This disease, if undisturbed, will run its course in a few weeks and disappear without the use of any remedies. It should, therefore, be let alone, or only bland, soothing applications resorted to, to allay the burning, itching, etc., such as gum, or slippery-elm water, with hop tea, etc. Some recommend the application of common writing ink, and this will prove a good remedy when the disease is situated on the face, as it would almost compel the patient to remain within doors.

ECZEMA—HOT AND PAINFUL ERUPTION.

This disease is characterized by patches of numerous very minute vesicles, with little or no redness of the skin between them. It is attended with very severe smarting or itching, which will cause the patient, almost involuntarily, to scratch and tear the surface with his nails. It throws out a profuse, tenacious secretion, which hardens and forms scabs or scales. In many instances when these come off the skin is left healthy beneath, and soon returns to its natural healthy color. But often successive crusts appear, and the case becomes chronic, and sometimes very stubborn. When this disease appears on the scalp, the sticky secretion will glue and mat the hair together, so as often to convert the whole surface into a hard adherent mass, which, by being pushed up by a continued deposit beneath, actually pulls the hair out by the roots, and may cause permanent baldness; but generally the hair is reproduced after the disease runs its course, or is removed by appropriate means. Sometimes this disease extends from the head to the face, and constitutes one of the forms of what is described by authors as *Crusta Lactea*, or it may appear first on the face and extend to various parts of the body in patches, when it is generally recognized under this title.

Treatment.—If the case is recent, the treatment is very simple. Any febrile symptoms must be removed by small doses of the saline mixture, the diet should be light, though nourishing, and perfect cleanliness should be preserved. The mildest, and, at the same time, the most powerful remedy I have ever seen used for *tetter* of this variety is *beefs-foot* oil, recently made, and *oil of sassafras.* The proportions are two tea-spoonfuls of oil of sassafras to a common tea-cupful of the beefs-foot oil. The parts should be washed clean with castile soap-suds and wiped dry, and then anointed with this mixture. This should be repeated daily when the disease is situated on the hands or face, but twice a week is often enough when on the scalp or other parts kept covered. If the disease has continued until the hair is thoroughly matted, and hard scabs formed, great care and patience will have to be exercised in getting it cleansed the first time. No violent efforts should be made for this purpose, but the part, freely anointed with the above preparation, should be covered with a poultice every night, and washed in the morning with warm soap-suds, until the scabs become softened, and can be removed without disturbing the surface beneath.

If the disease should resist this treatment for three or four weeks, then try the following: Oil of sassafras, half an ounce; corrosive sublimate, thirty grains; proof spirit, four ounces; mix; apply once a day, until it produces some inflammation, then suspend it, and go on with the treatment as before. If this should fail to produce some inflammation, its strength must be increased by adding more of the mercurial. I have in a few instances found it necessary to make it of the strength of fifteen grains to the ounce, which is just double the strength recommended above. No fears need be apprehended of injury resulting from the use of this powerful poison, combined as directed in the above formulæ; as the oil of sassafras effectually destroys its capability of harm. I have been obliged to have the above mixture compounded under my own eye, druggists being afraid to issue a compound of such strength to unknown persons. For very delicate children it may be well to com-

mence with a preparation containing less of the mercurial, say three grains to the ounce, but it must be increased until it produces the effect desired, that is, some inflammation of its own.

It will often happen that under this treatment the disease appears to yield readily; but in a short time new symptoms of it will appear, and require the same routine to be gone over again, even to the third or fourth time, but each time it is more easily subdued than before. The reason, I presume, for the necessity of having to cure this complaint several times, is, that it is caused by the presence of poisonous animalculæ, and that several *hunts* will be necessary to exterminate the last of the race. During the local treatment, and for some time after, it is best to give the iodide of potassa in small doses, namely: put an ounce of potash into a quart of water, and give from a tea-spoonful to a table-spoonful after each meal, omitting it every third week.

SCABIES—ITCHING TETTER—ITCH.

Most persons are sufficiently acquainted with this vexatious disease to recognize it without any formal description. It loves a situation where the skin is thinnest and least exposed to rubbing, as between the fingers, in the armpit, between the thighs, etc. A form of this disease, introduced into this country during the war, and known as the *army itch*, is not so particular as to its *settlement*, but locates on any part of the body. This form of *itch* is, I think, a variety of *herpes*. Very little more is now known as to the treatment of this troublesome complaint than was known by our ancestors; the most effectual remedy is that which has been relied on from a period beyond which the memory of man runneth not, that is, sulphur used externally, or internally, or in both ways at once. "A thousand and one" remedies have been recommended, but this is a *sure thing*, and subject to as few objections as any other when used properly. I use it internally exclusively, it being not so annoying by its offensive odor, and never causing unpleasant effects by exposure to wet and cold, as is the case when used externally.

My plan of procedure is as follows: add two ounces of flour of sulphur to four ounces of honey, or molasses, and dissolve half an ounce of the iodide of potash in four ounces of water; and after having rubbed the *sulphur* and *honey* together, add the solution of potash, and mix them thoroughly; of this give from a tea-spoonful to a table-spoonful after each meal; given *after eating*, it mixes with the food, and is absorbed with it, and thus finds an entrance into the circulation, and reaches the surface in such a way that no point can escape its contact.

Immediate relief can be obtained and the cure expedited by also using an external application at the same time. The lotion recommended in *lichen*, namely, equal parts of oil of sassafras, laudanum, and glycerine, will give full satisfaction. But care must be taken not to poison babies by the absorption of the laudanum.

MILLIARY ERUPTION—SUDAMINA.

The above name is given to an eruption which often appears in low conditions of the system, as in the last stage of fevers and other acute diseases. It consists in very minute vesicles containing a perfectly transparent liquid, without redness or soreness, and disappears without the use of any remedies. It seems to be simply an exudation of transparent, colorless lymph under the cuticle, and is called *sweat eruption.*

PEMPHIGUS—VESICLE.

This eruption assumes the form of *bullae*, or *blebs*, or small blisters. It is much of the nature of that last described, differing only in the size of the vesicle, which is often as large as a cherry cut in two, and much resembles one, except in color, which is usually milky when not entirely transparent. It requires no especial treatment except flour or starch to absorb the discharge if the blisters should happen to become broken. As it always appears as a mere attendant on some other disease, or in a weak and depraved condition of the system produced by

other causes, resort must be had to remedies addressed to the existing state of the general system.

RUPIA.

This appears to be an eruption partaking of the character of *pemphigus* and *ecthyma*. The eruption is rather smaller than *pemphigus*, is more distinct than *ecthyma*. It, however, is like it in usually being filled with a clear, transparent fluid, but occasionally contains pus, has an inflamed margin which concretes into a hard scab or exudes a serous acrid *matter*, thus partaking of the nature of *pemphigus*. As the treatment of this disease is the same as that directed for the two complaints named, according as it presents the character of one or the other, the reader is referred to them.

PUSTULAR DISEASES.

Pustules differ from *vesicles* in that they contain pus, which is usually of an acrid quality, and occasions much uneasiness by the smarting, burning, or itching which attends it.

ECTHYMA—(TO RAGE.)

This disease is described as consisting of blistering pustules, distinct, without fever, and not contagious. It commonly first makes its appearance as conical elevations the size of a split pea or less, very red and painful. The pustules occur most frequently on the neck and shoulders, sometimes on the extremities, but never on the face or head. In a few days they exhibit a little pus at the summit, and present the appearance of small boils, which in a short time break, and discharge a thick acrid *matter* that soon concretes into hard scabs; these separate and come off in two or three weeks, leaving a dark-red surface, and sometimes a slight scar in the center. This constitutes the acute form, and the irritation occasioned by so many little angry boils is often sufficient to produce considerable symptomatic fever. The application of *tartar emetic*, the skin of *old bacon*, and some other things will produce a crop of this eruption, which can not be distinguished from that aris-

ing from constitutional causes, and will enable the reader to understand what is meant by the term *ecthyma*, and make it easy to *diagnose* it. It often happens that as one crop of this eruption dries up another makes its appearance, and we occasionally see them in every stage of development on the body at the same time, and in this way the disease becomes chronic; but no difference how often the crops are repeated, each retains its acute character. In the old, the intemperate, and in low states of the system generally, the eruption presents a dark or purplish hue.

The *treatment* consists in soothing applications to the surface, gentle purgatives, as the saline mixture, when the action is too high, and stimulants and tonics when it is too low, and anodynes or opiates to relieve excessive restlessness and procure sleep. If the disease proves stubborn resort may be had to more active means; as, laudanum, one table-spoonful; spirits of camphor and glycerine, each three table-spoonfuls; water, half a pint. Sponge the surface with this three times a day. If this should fail, then take, oil of sassafras, half an ounce; tinct. of iodine and tinct. of arnica, each one ounce; glycerine, one and a half ounces. Mix, and apply with a little mop or sponge to the pustules three times a day. All these remedies may be used at the same time. Quinine has a good effect.

IMPETIGO (TO INFEST)—MOIST TETTER.

This disease consists in very minute pustules, which appear in clusters, and when the discharge from them dries, forms disagreeable-looking scabs, especially on the face; when in the hair it forms one of the varieties of *scald-head*. The treatment of *impetigo* is precisely the same as that directed for ecthyma, and need not be repeated.

PORRIGO (POROUS)—TINEA CAPITIS—SCALD-HEAD.

The characteristic feature of this disease is that it consists of small *favous pustules*—namely, pitted, reticulated—like the cells of a honey-comb. These may be scattered, or they may appear in clusters and coalesce, or run together, so as to form large sores, sometimes involving the whole

scalp. Each of these little ulcers throws out a yellowish, tenacious secretion, which soon hardens, often glueing the hairs together, until the whole surface becomes incased in a thick, hard substance, as unyielding as a gourd. This cover continues to increase in thickness by fresh additions from beneath; and, if not interfered with, may continue for years, and, affording a convenient shelter for vermin, often presents a most disgusting appearance. Ulceration may go on under these scabs until deep excavations are made in the scalp, even, it is said, penetrating to the bone, and causing the outer table to become carious.

In many of its characteristics *porrigo* resembles *eczema*, but they differ in that the latter throws off a serous, watery secretion, and the former an acrid pus; then *eczema* never destroys the integrity of the true skin, while *porrigo* often makes deep excavations; but they might be considered the same disease so far as the treatment is concerned, and the reader is therefore referred to what is said under the head of eczema for the management of *scald-head*.

ACNE (VIGOR OF LIFE)—HARD PIMPLE.

This disease is a great source of annoyance to the patient; occurring, as it does, about the season of *puberty*, when *good looks* is the subject of much solicitude; it is indeed vexatious to have the face disfigured by the presence of these *courage bumps*. But the cure is usually easily effected. Abstain from stimulating food and drinks, keep the blood cool by a daily use of the *saline mixture*, and daily bathe the parts in a weak solution of common soda. If it should resist this treatment, add one grain of *corrosive sublimate* to the pint of soda water, and every day increase it one grain until the pimples disappear, or some inflammation is set up; then discontinue the mercurial and apply glycerine. Should the pimples return, use the mixture of the strength last used. Perseverance in this plan will certainly remove the disease.

ROSACEA—ROSE-LIKE.

This is also a disease whose importance chiefly consists

in its marring the "human face divine." It generally commences on the nose, and often continues to be limited to this locality. It chiefly attacks the old and the intemperate, and, from its shining red or purple color, is known as *whisky* or *rum blossom*. It also should be treated as *eczema*. But no remedies will succeed without a change of habits; the intemperate must quit his cups, the sedentary must eat less and exercise more, and the old must limit his diet to the real wants of the system, using that which is nutritious but unstimulating.

SCALY DISEASES.

A number of scaly diseases are described by authors, but we will only note the following:

PSORIASIS—DRY TETTER.

This disease will be readily recognized by the reader, it being the most common form in which that class of diseases known as *tetter* is usually met with. It consists of a hardness and roughness of the skin, attended with most violent spells of itching, especially when the patient gets warm, after exposure to cold, or on going to bed. It mostly attacks the outside of the legs or arms, but occasionally is found on the abdomen or back. The internal treatment should be the same as that directed in scrofula, this being one form in which that disease manifests itself. The local treatment should be the *beefs-foot oil* and oil of sassafras, with the addition of corrosive sublimate if necessary. This disease often attacks the hands, rendering the skin hard and unyielding, often exhibiting unsightly and painful cracks or fissures in the skin, and causing the finger-nails to assume grotesque appearances. In order to effect a cure in these cases it is essential that the hands should be enveloped in leather gloves. When the duties devolving upon the individual render this impossible, a cure can be effected by keeping the gloves on at night only.

RINGWORM—PORRIGO SCUTULATA.

This is another skin disease which is worthy of mention

only because of its unsightly appearance, especially when it locates on the cheek, which it often does. It usually makes its appearance about puberty, and is indicative of constitutional vigor. We meet among the masses with many infallible cures for *ringworm*, many of which have doubtless obtained their celebrity from having been used at the precise time when the disease would have disappeared of itself—for it does not live forever, but has a determinate period of existence, which, however, is rather long for the patience of those whose good looks it so materially mars. A very common prescription for this disease among the people is to rub it with the juice of a green walnut; but this produces a very unsightly stain, and often fails to cure. An application of nitrate of silver, ten grains to a tea-spoonful of rain-water, will cure it at once, but this also disfigures the countenance for a time. The same thing can be accomplished, without any considerable discoloration of the skin, by the following recipe:

℞ Bi chloride of mercury, (corrosive sublimate,) . . 10 grains.
Oil of sassafras, ... 1 drachm.
Alcohol, ... 1 ounce.
Mix.

Moisten the ringworm with this every night, and in the morning after washing. Perhaps the first application will excite some inflammation; wait until this subsides, keeping the part moistened with glycerine. After a few days, if the disease should not appear to be thoroughly killed, make another application of the medicine; two or three trials will insure success.

PITYRIASIS—DANDRUFF.

There are many varieties of this disease, but all are so nearly alike as not to require a separate description. The distinctive features consist in a rapid formation of bran-like scales, attended with considerable itching. It mostly appears in the head, or other parts covered with hair. It often is seated in the eyelids, and causes the eyelashes to fall out. Any of the strong lotions recommended for destroying the specific action in other skin diseases are of

service in this, as the dilute mineral acids, the solution of corrosive sublimate, etc.; but the mildest remedy which I have found to prove effectual is a drachm of common soda and thirty drops of oil of sassafras, dissolved in four ounces of alcohol. This should be well applied once or twice every day with a soft brush, and continued for some time after the disease has apparently disappeared.

CORNS.

Corns are nothing more than thickened and condensed epithelium, or scarf-skin, which, by a succession of layers, often acquire considerable thickness, rising above the surface and imbedded into the tissues, and by their pressure upon the nerves often occasion much suffering.

Corns are always the result of unequal pressure, made by a badly-fitting shoe or boot. A tight shoe, if made to conform to the contour of the foot, may occasion other kinds of mischief, by impeding the circulation, causing headache, etc., but it will not produce corns. The Chinese compress the feet of female children so as to prevent their growth, but yet this cruel and foolish practice does not occasion corns. This is a point of some importance, for the idea that it is a tight fit that occasions the growth of corns, often induces parents to force their growing daughters to wear shoes too large for them, and of course only touching the foot in places. Now, if the material be unyielding, the point of pressure will as certainly become the seat of a hypertrophy, or thickening of the epithelium, as effect follows its cause. The true secret, therefore, of preventing corns is to wear good-fitting shoes or boots, and at least once a week bathe the feet in bran and warm water, so as to soften and remove the cast-off scarf-skin. And this also constitutes the best means of cure after they are formed; but in this case the bathing must take place every night, and at each time as much of the hardened cuticle should be removed as can be easily done, and then covered with a fine cloth which has been rubbed with a piece of mild soap until sufficient has adhered to cover the cloth. This simple process will inevitably cure the corn if persevered in; but

it will return again after removal in this or any other way, except unequal pressure should be avoided. Persons subject to corns should employ some sensible shoemaker to manufacture their shoes or boots, who understands the true shape of the foot, and can make a neat fit without producing unequal pressure. The material should always be the best calf, and it should be kept pliant by an occasional oiling.

WARTS.

Warts are the only variety of tubercular skin disease which will be noticed, as the others mentioned by authors, as yaws, elephantiasis, etc., are unknown in this country. A description of warts is quite unnecessary, as every one is familiar with their appearance. They usually appear in clusters, and there is always one or more which is larger and of a rougher texture than the rest, and is called the mother-wart or seed-wart. As warts very often spontaneously disappear, various inert substances and foolish devices have gained credence among the people as cures. Nothing more is commonly necessary to cause a whole family of warts to disappear than to cut the top of the mother-wart until it bleeds a little, and then dip a quill into nitric acid, and hold it for a minute or two with the end touching the cut surface; a soft poultice should now be applied. For some days the wart operated on will be a little sore, and thus draw your attention to the subject; but when this ceases to annoy, you will probably forget the warts, and when you again think of them, you will find they have all disappeared.

MISCELLANEOUS DISEASES.

THE following diseases, being of a mixed or specific character, could not well come under any of the preceding heads, and are therefore grouped together under the above title.

APOPLEXY.

By the term apoplexy is meant sudden insensibility, the loss of sensation, thought, and voluntary motion, with a more or less severe disturbance of the functions of respiration and circulation. It is a state of coma occurring spontaneously and suddenly.

It is often a matter of difficulty to distinguish between apoplectic coma and that due to a narcotic poison, or to drunkenness. The distinction is most important as regards the treatment. The coma is profound in each instance, though arising from so different a cause; the history of the case, the general appearance and age, and the presence or absence of the odor of spirits in the breath, are the only points which help to solve the difficulty.

The state of coma may end in three ways. Either it may gradually pass off, leaving the patient well, or it may terminate in incomplete recovery, the mind being impaired, and some parts of the body paralyzed; or it may cease in death. On examining the brain, we find either no appearance whatever of disease, or extravasated blood, or effusion of serum into the ventricles or beneath the arachnoid. Dr. Abercrombie calls the first, that which is fatal without leaving any traces, *simple* apoplexy; the second, *sanguineous* apo-

plexy, or *cerebral hemorrhage;* the third, *serous* apoplexy. During life, we are unable to distinguish by the symptoms these three varieties.

Warnings.—This dreadful visitation is seldom experienced without some previous threatenings, which, properly interpreted, should put the patient on his guard. The following individuals may be said to be predisposed to apoplexy: those whose ancestors suffered from it; men of a peculiar habit of body, with a large head, florid face, and short, thick neck; and individuals advanced in life, beyond fifty. A predisposition may also be engendered by disease of the kidneys, of the heart, or of the cerebral blood-vessels, by intemperance, and by the cessation of habitual discharges. Among the threatenings, the following are the most important: headache; giddiness, particularly on stooping; a feeling of weight and fulness in the head; noises in the ears; transient deafness or transient blindness; double vision; occasionally epistaxis; numbness; loss of memory; great mental depression; incoherent talking; drowsiness; indistinctness of articulation, and partial paralysis, sometimes affecting a limb, sometimes the muscles of the face, sometimes the eyelids.

Modes of Seizure.—Dr. Abercrombie has shown that the apoplectic attack commences in three different ways. "In the first form of the attack, the patient falls down suddenly, deprived of sense and motion, and lies like a person in a deep sleep, his face generally flushed, his breathing stertorous, his pulse full and not frequent, sometimes below the natural standard. In some of these cases, convulsions occur; in others, rigidity and contraction of the muscles of the limbs, sometimes on one side only."

In the second form, the coma is not the first symptom, but rather a sudden attack of pain in the head; the patient becomes pale, sick and faint, sometimes vomits, and frequently falls down in a state resembling syncope. Occasionally he does not fall down, the sudden attack of pain being merely accompanied by slight and transient loss of memory. After a few hours, however, the headache continuing, he becomes heavy, oppressed, forgetful, and gradu-

ally sinks into perfect coma, from which recovery is rare. A large clot is usually found in the brain.

The third form of apoplectic seizure begins with a sudden attack of paralysis of one side of the body, with loss of speech, but no loss of consciousness. The paralysis passes gradually into apoplexy; or, in some favorable cases, it slowly goes off, and the patient recovers.

Phenomena during the Fit.—The duration of the apoplectic fit varies from two or three hours to as many days. There is total unconsciousness; pulse, at first generally small, becomes full and strong according as the system recovers from the shock; it is usually slower than natural, sometimes intermitting; respiration slow, embarrassed, often accompanied by stertor; frothy saliva about the mouth. In bad cases, the body is covered with a cold, clammy sweat; the face is pale; the eyes dull and glassy, with dilatation of the pupils; the teeth firmly clenched; power of deglutition lost, or much impeded; torpidity of the bowels, or, if they act, the motions are passed involuntarily; and either involuntary micturition, or, as most frequently happens, retention of urine until the bladder becomes distended, overflows, as it were, and causes the urine to be constantly dribbling away. When the patient recovers incompletely, paralysis remains.

Treatment.—This may be divided into that which is prophylactic, and that which is required when an attack has occurred.

Prophylaxis.—When a predisposition to apoplexy is suspected, the individual should avoid strong bodily exertion; venereal excitement; the stimulus and irritation of drunkenness; violent mental emotion; straining at stool; long-continued stooping; tight neckcloths; too much indulgence in sleep; and warm baths. He should observe a cool spare diet, free from alcoholic drinks; regular exercise; and must pay great attention to his bowels. Washing the head daily with cold water, or establishing a drain near the head by means of an issue or seton in the neck, will perhaps do good. When giddiness, headache, throbbing of the arteries of the head, and epistaxis are present, much benefit will result

from active purging, and from blistering the nape of the neck.

When an attack has occurred.—Formerly the treatment of every attack of apoplexy was commenced by bleeding; and statistics prove that the more the blood was taken away, the greater was the mortality. This can easily be imagined, for we only see the patient when the mischief is done: rupture and extravasation of blood has taken place, and bleeding won't remove it. But it is said depletion will prevent further extravasation. It is more probable that, so far from its doing so, it promotes it, by inducing greater thinness of the blood, and by diminishing its power of coagulating. In proof of this, it is only necessary to read the reports of not a few cases, where it is distinctly stated that the abstraction of blood was immediately followed by an aggravation of the symptoms and by paralysis. The rule to adopt is that laid down by Cullen—*to obviate the tendency to death.* If the tendency be towards death by coma; if the pulse be full, or hard, or thrilling; if the vessels of the neck are congested, and if the face be flushed and turgid, then bloodletting may be called for. If, on the contrary, the patient is dying from syncope, with a feeble or almost imperceptible pulse, and a cold, clammy skin, then bleeding will only insure a speedily fatal termination. In either case, the patient should be removed into a cool, well-ventilated room; his head should be raised; all the tight parts of his dress loosened, especially his cravat and shirt-collar; and cold applied to the head by means of pounded ice in a bladder. If bleeding be decided on, it is best to do it by means of leeches applied to the nostrils or to the nape of the neck.

Active purgatives do good in most cases. If the patient can swallow, a full dose of calomel and jalap, followed by the common black draught, may be given. If the power of deglutition be lost, three or four drops of croton oil should be put on the back part of the tongue. Stimulating enemata should also be thrown up the rectum. Blisters are often subsequently of use, applied over the scalp or to the neck. Some recommend emetics: unless the attack was clearly due to an overloaded stomach, I should avoid them.

CONCUSSION OF THE BRAIN.

Concussion of the brain is signalized by fainting, sickness, stupor, insensibility, or sudden death, succeeding immediately to some blow or some act of external violence. Although cases of this kind are usually regarded as surgical, yet their importance demands so imperatively that every one should be well acquainted with their symptoms, treatment, etc., that no apology is needed for the introduction of this section.

Symptoms.—These will vary according to the degree of concussion. When the shock has only been slight, the person soon recovers from the state of unconsciousness, and complains only of confusion of ideas, faintness, sickness, a desire to sleep, and ringing noises in his ears. In a more severe case, the insensibility continues longer; the patient lies as if in a deep slumber, his pupils are insensible to the stimulus of light, and his breathing is often scarcely perceptible. When, after a variable interval, partial recovery ensues, there is great confusion of thought, often an inability to articulate distinctly, frequently severe vomiting, and sometimes paralysis of one or other of the extremities. In the worst forms of concussion, the person is felled to the ground by the shock, whatever it may be, and dies upon the spot.

Diagnosis.—The following circumstances, according to Chelius, distinguish concussion from pressure upon the brain caused by extravasation of blood. In concussion which immediately follows external violence, the patient usually recovers himself in some degree. In extravasation, he lies in an apoplectic state, with snoring, difficult breathing, hard, irregular, intermitting pulse, with pupils widely dilated, but no vomiting. In concussion, the body is cold; the breathing easy; the pulse regular and small; the countenance little changed. Extravasation and concussion may, it must be remembered, occur together. It is often difficult to distinguish between concussion and drunkenness. The history of the patient, his general appearance, and the smell of his breath, are the chief points to attend to.

Prognosis.—This must in all cases be guarded. In a

severe form of concussion, the convalescence is always tedious; and it frequently leaves behind it permanent impairment of the memory, loss of smell or taste, and weakness of sight or even amaurosis.

Treatment.—In all cases the patient should be carefully watched. If, a few hours after recovery from the shock, the reäction seem to be intense, the head should be elevated, and cold applied; two or three drops of croton oil may also be placed on the tongue. Generally speaking, however, the shock to the system is so great that mild stimulants are necessary; and a little wine, or brandy and water, should be cautiously administered. At the same time, if the surface be cold, warmth must be applied by means of blankets, bottles of hot water, hot bricks, etc. In the after-treatment of these cases, a mild unstimulating diet, rest and quiet, with gentle purgatives, will alone be necessary.

TOOTHACHE, OR ODONTALGIA.

Toothache offers every possible variety in degree, character, and duration. The pain runs through all the grades which intervene between a slight sensation of uneasiness and insupportable agony. It may be dull, aching, heavy, sharp, pungent, throbbing, grinding, or lancinating. It may be continued or paroxysmal, remittent or intermittent, and regular or irregular in its recurrence. It may come in flashes, and as suddenly disappear; or may continue a long time with little variation. Its varieties will be best considered under the different pathological conditions which it attends.

NERVOUS OR NEURALGIC TOOTHACHE.

A purely neuralgic condition of the teeth is not uncommon. The affection may be seated in the nerve of a single tooth; but it much more commonly occupies the nervous trunk from which several teeth are supplied; and not unfrequently affects rather the jaw than the teeth themselves.

The pain is usually of the acute character, sometimes mild in the beginning, gradually increasing in intensity, and

as gradually declining; but usually very irregular, at one time moderate, at another severe, and occasionally darting with excruciating violence through the dental arches. Not unfrequently it assumes a regularly intermittent form.

This variety of toothache may depend on a morbid state of the nerve or nerves which are the immediate seat of it, but more frequently originates in a condition of the nervous system, such as disposes to neuralgic pains generally. With an existing predisposition, it is sometimes invited by caries, but very frequently occurs in teeth which are perfectly sound. Almost any thing which disturbs the system may serve as an exciting cause; but the most frequent causes are probably vicissitudes of weather, and the application of very cold or very hot substances to the teeth, especially in alternation. The disease appears to be sometimes sympathetic with morbid states of the stomach or other distant organs; and not unfrequently occurs in persons of a gouty or rheumatic diathesis.

Treatment.—When the neuralgic affection can be traced to sympathy with disease elsewhere, this should be corrected. Thus, antacids should be given in acidity of stomach, laxatives in constipation of the bowels, the blue-mass or calomel in deranged or deficient hepatic secretion, aloes or other emmenagogue in amenorrhœa; and not unfrequently the coëxistence of two or more of these affections calls for the simultaneous use of the appropriate remedies. If a rheumatic or gouty diathesis be suspected, wine of colchicum, hot pediluvia, and other means adapted to these disorders, may be tried. Peruvian bark or sulphate of quinia will be found an almost certain remedy in regular intermittent cases, and often useful in others.

All the remedies, both local and general, recommended under the head of neuralgia, may be brought to bear upon this particular variety. Immediate ease can nearly always be obtained by bathing the side of the face with chloroform liniment; a little lint or cotton may also be saturated with it, and applied immediately to the tooth. Carious teeth should generally be removed.

INFLAMMATORY TOOTHACHE.

This may exist with or without caries; but is in the great majority of instances dependent upon that affection. Before proceeding, therefore, to an account of its phenomena, it will be proper to say a few words on the subject of carious teeth.

Caries is an affection of the interior or bony structure of the teeth, the enamel being without vitality, and not therefore subject to morbid action.

Caries sometimes begins on the internal surface of the tooth, and extends outward, exhibiting usually, as the first evidence of its existence, a dark appearance beneath the enamel. But much more frequently it proceeds from without inward, commencing in the bone immediately beneath the enamel, and exhibiting a yellowish or brownish spot in this situation. In some cases, especially when the surface is black or very dark, the caries advances very slowly, or is altogether arrested. In such cases, the surface is commonly also harder and less friable than in the yellowish caries.

This decay of the teeth is not necessarily attended with pain. Occasionally the affection runs through its whole course with little or no suffering to the individual; and sometimes, after having been painful, it ceases at certain periods of life to be so, though the process of decay may continue. In some instances of caries without toothache, the irritation appears to be felt sympathetically in other parts; and painful affections of the head, ears, and eyes, have ceased upon the extraction of a decayed tooth which had never ached.

The most frequent cause of caries is probably some condition of the bone acquired during its formation, in consequence of peculiarity of constitution, or the state of health existing at the time. Thus, persons affected with scrofula or scurvy, during dentition, are apt to be affected with decay of the teeth in after life. There is reason also to believe that the predisposition is sometimes hereditary. Women and young children are more subject to the disease

than men. The direct or exciting causes are either such as destroy the integrity of the enamel, and thereby expose the bone to the influence of irritant substances, or such as operate directly upon its vital susceptibilities. Among the former are acids and other corrosive substances taken into the mouth, sour eructations from the stomach, depraved salivary or mucous secretions, the sordes which collect about uncleaned teeth, the contact or near vicinity of a carious surface in another tooth, the attrition of opposing surfaces of the teeth, and all kinds of mechanical violence. Of the latter, the principal are heat and cold suddenly applied, and especially in quick alternation. Hence it is, perhaps, in part, that caries of the teeth is more common in civilized life, where hot drinks are habitually used, than among savages. The very free use of sugar, as an article of diet, is thought by many to be a frequent cause of the disease. Some have ascribed its effects to a direct action on the teeth; but it is more probable that it operates, if at all, by impairing digestion. Whatever deranges the digestive function may occasion caries indirectly, by giving rise to acrid and corrosive eructations, and by altering the secretions which are poured into the mouth. Nevertheless, sugar is certainly strongly irritant to the dental nerves; as is evinced by the severe toothache so often occasioned by its contact with a carious surface.

When the caries is slight, and especially when it occupies the sides of the teeth, it may often be arrested by removing the diseased portion with the file; and the same end may be attained by filling the cavity with some metallic substance, such as lead, tin-foil, or gold leaf, so as to exclude the air and all irritant bodies. Plugging may be resorted to in all cases when the tooth has not begun to ache, or when it has ached but moderately and for a short time.

The inflammation which occasions toothache may be seated in the pulp of the tooth, in the cord which enters its lower extremity, or in the periosteum investing its roots, and reflected over the interior of the alveolar cavity. At first the pain is usually moderate, and it may continue thus throughout; but generally it increases, and at length be-

comes intense, in consequence probably of the pressure to which the swollen and inflamed parts are subjected by the unyielding bone around them. The tooth is at the same time very tender; and any force applied to it greatly increases the pain. The inflammation is propagated by contiguous sympathy to the gum and other parts of the face, which become much swollen; and the swelling sometimes extends to the salivary and absorbent glands, and even to the tonsils. The violence of the pain often abates somewhat, upon the occurrence of this external inflammation, which appears to act as a revulsive. The tumefaction not unfrequently subsides, without the occurrence of suppuration, and the toothache ceases for a time. Very frequently, however, an abscess forms either in the gum, upon the upper or lower jaws, in the roof of the mouth, or, more rarely, in the substance of the cheek. There is often much constitutional disturbance, with fever, headache, and inability to sleep. The pain, during the suppurative stage, is usually pulsative or throbbing. The abscess at length opens, and relief is obtained.

Suppuration also takes place in the pulp or dental cord. If an opening exist into the central cavity of the tooth, the pus may be discharged by this route; but if there be no such outlet, the matter accumulating occasions inflammation and absorption of the socket, and thus makes itself a way out, either between the tooth and the gum, or directly through the latter, forming an abscess in its substance. When this opens, the pain is relieved; but the opening is apt to become fistulous, and a continual purulent discharge to be maintained until the tooth is wholly removed.

The most frequent cause of these inflammatory affections is the exposure of the pulp, consequent caries, or other destruction of the tooth.

Treatment.—Little general treatment is requisite. Saline cathartics, and abstinence from animal food, may be recommended when the inflammation affects the neighboring parts; and an opiate at night is generally advisable when the pain is severe. The loss of blood may become necessary if there should be strong determination to the brain.

Much may be done locally to afford relief, and hasten the cure. The means employed are sedative, anodyne, and revulsive applications, and depletory measures, either within the mouth or externally. Among these measures are brandy, or tincture of camphor, held for a short time in the mouth; the chewing or smoking of tobacco; poultices to the face, either simply emollient, or rendered anodyne by the admixture of laudanum, hops, etc.; anodyne lotions, as tincture of camphor with laudanum; rubefacient applications, as capsicum, ginger, and mustard in the form of cataplasms; blisters to the side or back of the neck, or behind the ears; steaming the face and head with the vapors of hot water; scarification of the gums; and, finally, leeches outside of the face or to the gums, when the inflammation is considerable, and it is deemed highly desirable to bring about resolution. In most cases, the milder of these means are abundantly sufficient; as the disease is very generally soon relieved by suppuration, and the discharge of the pus. After the abscess has formed, it should be opened if it does not speedily discharge itself; and, when it occupies the substance of the cheek, care should be taken to make an early opening inwardly, lest it might break externally and leave an unsightly scar.

When caries exists, in addition to the means just mentioned, applications may be made to the cavity of the tooth itself. These are usually such as relieve pain by their anodyne, or obtund sensibility by their excessively irritant action. They consist chiefly of chloroform liniment, laudanum or opium, in reference to the former effect; and of certain volatile oils, as those of cinnamon and cloves, in reference to the latter. The most efficient of these applications, in the experience of the author, is creosote. Put undiluted into the carious cavity, this substance not only relieves, but also for a time often effectually cures toothache. But as it speedily destroys the tooth, it should not be used, if it is desired to save it; and great care is necessary to prevent it from coming in contact with the sound teeth, and injuring them. When liquids are employed, they should be introduced into the cavity on cotton. If opium is used,

care should be taken that the quantity be not so great as, if swallowed, to do serious injury. Various means have been used for destroying the nerve, the most certain of which is the arsenious acid. A mere speck of this should be introduced into the cavity and covered with beeswax. This causes no pain, and the amount is so small that no injury would follow if accidentally swallowed.

When a tooth frequently becomes painful, and is too far gone to be saved, especially if the general health suffer, it should be extracted. In cases of dental fistulæ, it is generally advisable to remove the tooth, or such part of it as remains. The first teeth in children may be freely extracted, when carious and painful, as they are followed by others. But, in deciding as to the propriety of extraction, it should always be borne in mind that, when the permanent teeth are removed, the alveolar processes of the jaws are absorbed, and the cheeks or lips fall in, producing an appearance of old age. Besides, a carious tooth is often useful in mastication, in the intervals of pain.

RHEUMATIC AND GOUTY TOOTHACHE.

This is either neuralgic or inflammatory, and might have come, accordingly, under one or the other of the two preceding heads. But there is something peculiar in its character, which often serves to distinguish it from toothache of a different origin, and demands a somewhat peculiar treatment. It may, in general, be recognized by its occurrence in individuals of a rheumatic or gouty predisposition, by the simultaneous or immediately antecedent existence of these diseases in other parts of the body, by its extension, for the most part, through several teeth, or even the whole jaw, and by the fact that it is seldom or never attended with suppuration. The pain is, in the inflammatory variety, rather dull than acute. It is very apt to be induced by vicissitudes in the weather. It may occur either in carious or sound teeth. In addition to the local measures above enumerated, the constitutional treatment may be employed, which is applicable to other forms of rheumatism or gout; and efforts may be made by stimulating pediluvia to invite

the disease, if thought advisable, to the lower extremities.

FALLING OF THE TEETH.

The absorption of the socket, and consequent loss of the teeth, which is apt to occur in advanced life, is to be regarded rather as a physiological than a morbid process. But, in consequence of certain diseases affecting the alveoli and gums, the teeth occasionally fall out prematurely, although not themselves apparently diseased. This happens in scurvy, in canker and gangrene of the mouth, and occasionally as a consequence of mercurial inflammation of the gums. I have never found so good a remedy for this disease as the following: To a pint of good whiskey add an ounce of nutgalls, and thirty or forty drops of oil of peppermint; wash the mouth with this freely several times a day; and when the gums become considerably hardened, have the teeth cleansed of all incrustations, still continue the wash, and also use a soft brush; and, as the gums harden, a stiffer one may be used.

MUMPS—PAROTITIS.

Though named by nosologists from the parotid, this affection does not consist essentially in inflammation of the salivary glands; as is sufficiently proved by the tendency to metastasis, and the contagious origin of the complaint; both of which point to some change in the blood, or the presence in that fluid of some morbific agent, as the probable cause of the local affections.

Mumps usually begin with a feeling of stiffness about the joint of the jaws, which is followed by pain, heat, and swelling beneath the ear, but with little or no redness of the skin. The swelling rapidly extends in all directions, sometimes considerably down the neck; and the other salivary glands are not unfrequently involved. The skin is somewhat tense, but the tumor is not very hard or elastic. When the swelling is at its height there is often great difficulty in opening the mouth, and sometimes deglutition is painful; though frequently the latter symptom is quite

wanting, and the complaint may thus be distinguished from angina or cynanche tonsillaris. There is generally more or less fever, but in most cases not sufficient to confine the patient. Sometimes, however, it is very high, with a furred or dry tongue, loss of appetite, heat of skin, and even some delirium. The inflammation usually reaches its highest point in two days, continues unabated until the end of the fourth, and then gradually declines, disappearing in about a week, with a disposition to perspiration in the neighboring parts, and sometimes over the whole surface of the body. The gland very seldom suppurates. I do not remember to have witnessed a case in which this result has occurred. When it does occur, the suppuration is said to be superficial. Sometimes only one parotid is affected, but more generally both, either simultaneously or successively. Not unfrequently the inflammation of the salivary glands suddenly subsides, and the testicle or mamma becomes painful and swollen. A metastasis has taken place. This I have noticed to occur especially in young males approaching manhood. When only one parotid has been affected, the testicle or mamma of the corresponding side generally becomes the seat of the translated disease. The labia pudendi in females are said sometimes to be attacked. Generally, the new inflammation subsides in three or four days, without exhibiting any tendency to suppuration. In some instances it suddenly returns to the parotid, leaving the mamma and testicle sound. Translation may also take place to other organs. There is reason for the conjecture that the pancreas is thus sometimes affected. That a metastasis to the brain occasionally takes place is well known. This is, indeed, the chief danger of mumps, and sometimes ends in death. The disease is usually exceedingly mild, and almost never terminates fatally, unless under the circumstances just alluded to.

Contagion is undoubtedly a frequent cause of mumps; but there is reason to believe that the disease also sometimes originates from epidemic or endemic influences, independently of contagion, though, when thus produced, it is equally capable of self-propagation as if it had arisen in the ordinary

way. It occurs most frequently in the young, and more frequently in males than females. Like most other contagious affections, it seldom attacks the same individual more than once. Occasionally, however, it does so. Many persons escape it altogether.

In most cases of mumps, little treatment is requisite. It is usually sufficient for the patient to live low, and avoid exposure to cold and wet. Should the bowels be confined, refrigerant laxatives, as the seidlitz powder, or small doses of one of the neutral salts, should be given occasionally. All repellant applications to the tumor should be scrupulously avoided, for fear that a metastasis may take place. It is indeed advisable to keep the parts warm, so as to prevent the repellant influence of the external cold, and to favor a tendency to perspiration. This is peculiarly appropriate in the present affection, in consequence of the absence of all disposition to the suppurative process. Singed tow is a popular and very suitable application; but carded wool or cotton, or a piece of soft flannel, may be substituted. If the inflammation should be considerable, and fever exist, the saline cathartics may be given more freely; and, if the fever should be high enough to confine the patient to bed, the antimonials, and other refrigerant diaphoretics, may be added to the other measures.

Should the inflammation be translated to the mamma or testicle, warm emollient poultices should be applied. But if the local affection is considerable, leeches should be freely applied, especially to the testicle. In the cases of young and vigorous men, it is sometimes proper to bleed generally, as well as locally. The patient should be confined to the horizontal posture, the testicle should be sustained by a suspensory bag or other means, and emollient applications should be made after leeching. At the same time it is advised to endeavor to recall the inflammation to the parotid by some stimulating application, as a sinapism or blister over the gland.

In case of metastasis to the brain or other vital organ, antiphlogistic measures should be energetically employed, as in inflammation of these organs from other causes.

When much suffering is experienced from the swollen gland, an application of the chloroform liniment will usually allay it in a few minutes.

HEMORRHOIDS, OR PILES.

This term has been applied both to hemorrhages from the rectum, and to certain tumors which form in and about the anus. In the former case, whether the hemorrhage is or is not accompanied with tumors, the affection is called *bleeding piles;* in the latter, when unconnected with any discharge, *blind piles.* The tumors are also distinguished into *internal piles,* which are within the sphincter ani, and *external piles,* which are without the sphincter. I shall pay little attention to these distinctions in the following remarks. Simple bleeding from the rectum, independent of tumors, though it may proceed from the same pathological condition as that which gives rise to the tumors, falls properly among the hemorrhages, and has been considered with them. I shall here speak of the hemorrhage only as an attendant or result of the tumors.

Hemorrhoidal tumors are not entirely identical in character. The following varieties may be distinguished: 1. The simplest form is that of *varicose hemorrhoidal veins,* consisting in a mere distention of the coats of the vessel, as in varicose veins of the leg. The same vessels are affected in the external and internal piles, the veins above and below the sphincter being continuous, and not suffering dilatation in general at the sphincter, because compressed by that muscle. In their simplest state, these tumors are full of liquid blood, and may be readily evacuated by pressure, to be filled again immediately upon the removal of the pressure. After death they frequently disappear entirely, but may be rendered evident by injecting the inferior mesenteric vein. 2. The varicose tumors, in consequence of inflammation, or from rupture and consequent effusion of blood, undergo various changes producing a *solid, vascular, hard,* or *more or less spongy tumor.* 3. Instead of being varicose, the tumors sometimes consist of a sort of *erectile tissue,* which may be supposed to be formed by the

opening of communications between contiguous venous and perhaps arterial radicals, and between both and the cellular tissue, which assumes a denser and firmer character, exhibiting numerous interlacing fibres. 4. *Fleshy tumors* may originate from the altered varices described above, by the organization of the coagulated blood in their centre, or its absorption and the deposition of organizable lymph. Or they may be produced, as Burne suggests, by a circumscribed thickening of the submucous cellular tissue, which, thus projecting somewhat into the cavity of the rectum, is carried down during defecation, and, being arrested by the contraction of the sphincter, becomes inflamed and enlarged, so as not to admit of return. 5. These tumors may, by the influence of adhesive inflammation and subsequent absorption, be converted into *dry, hard, indolent, wart-like projections* in or near the anus; and, even though originating under the mucous membrane, may be covered with skin, in consequence of a not unfrequent transformation of that membrane when prolapsed and exposed long to the air. Another sequela of the proper hemorrhoids consists in *folds of the mucous membrane or skin* in or near the anus, resulting from the absorption of the contents of previous tumors.

The phenomena of piles are somewhat different, according as they are external or internal. In the external piles, a tumor is observed on the verge of the anus, of greater or less extent, sometimes on one side only of the aperture, sometimes completely surrounding it, and in the latter case usually presenting an unequal outline, as if consisting of several tumors separated by shallow furrows. The consistence and color of the tumor vary according to its character. If varicose, it is of a violet color, soft, and more or less removable by pressure; if fleshy, it is of a red color, solid, firm, and elastic. It has usually a broad base, and the fleshy tumor is often elongated from before backward, in consequence of being pressed on each side by the buttocks. When inflamed, these piles are peculiarly inconvenient by interfering with exercise in almost every way, and even with sitting. The internal piles are attended with a sense of distention which provokes a constant dispo-

sition to go to stool, and are peculiarly painful during the act of defecation. At first, though they are apt to descend at each evacuation, they usually return spontaneously when straining ceases; but after having acquired a certain magnitude, they can be restored to their position within the sphincter, after protrusion, only by the aid of the finger of the patient. When without the sphincter, they are rendered very painful by its contraction, but become comparatively easy when returned. After a time they descend when the patient walks or stands, especially if the rectum is full, and great inconvenience is experienced from the irritation and excoriation to which they are subjected. When thus extruded, they are sometimes strangulated by the sphincter, and become in consequence so much inflamed and swollen, that the patient cannot himself restore them, and even the surgeon finds considerable difficulty. Occasionally, in this condition, they burst, and by the discharge of blood are so much diminished in size, and relieved, as to admit of easy reduction. In other cases they swell enormously, become gangrenous, and, after having occasioned vast suffering and inconvenience to the patient, slough off, and terminate finally in a radical cure. There are the same differences in color and consistence in the internal as in the external piles. The fleshy tumors are sometimes narrow at the base, and bear no inconsiderable resemblance to polypi of the rectum.

Both the internal and external piles occasionally suppurate, forming abscesses or ulcers, which are often very troublesome, ending sometimes in the establishment of fistulæ, though in other cases they eventuate more favorably, and even lead to a permanent cure.

More or less hemorrhage often attends defecation, the blood proceeding either from the abraded mucous coat, or from a rupture of the tumor, or from an oozing over its whole surface in an inflamed state. In general, the bleeding is very slight, not more than sufficient to tinge the fæces. But it is sometimes copious, and, in a few comparatively rare cases, very much so, producing by its frequent returns, and the quantity discharged at each time, an

alarming and dangerous anemic condition of the patient. Some individuals are liable to periodical attacks of this hemorrhage, corresponding probably with the periodical returns of the hemorrhoidal congestion; and it is not always easy to decide whether the bleeding is or is not connected with the tumors. The blood sometimes collects in large quantities in the rectum before being discharged. It is in some instances venous, in others arterial; being of the former character probably when proceeding from a ruptured tumor, and of the latter when from other sources.

The general health often suffers very severely from long-continued and aggravated piles. Preventing exercise, and rendering necessary an almost constant use of medicines which interfere more or less with digestion, they lead to the production of dyspepsia with all its train of evils, and, besides, call numerous organs into a direct sympathy which cannot but impair their functions. Paleness, emaciation, and mental irritability or dejection, or at least a very uncertain condition of the feelings, are among their frequent concomitants.

Causes.—These are such as either produce congestion in the rectum, or act with an immediate mechanical violence upon its lower extremity. The former may be constitutional or local. Among the constitutional, the most common is probably a plethoric state of the blood-vessels, induced by a rich, nutritious, and stimulating diet, or simple excess in eating, conjoined with sedentary habits. Gouty and rheumatic irritation sometimes finds expression in a congested state of the hemorrhoidal vessels. The suppression of habitual discharges, such as that of the menses, sometimes leads to the same result. Hereditary predisposition has also been considered as one of the remote causes of piles, and there can be little doubt that a constitution of the system favorable to this disease occasionally descends from the parent to the offspring. Of the local causes, those are most efficient which by any means tend to check the return of blood from the hemorrhoidal veins. Torpidity and congestion of the liver often occasion piles, by impeding the return of the blood of the portal circulation

through the capillaries of that organ; and hepatic induration or enlargement may have the same effect, either in the same way, or by narrowing the ascending vena cava. Pregnancy, by mechanical pressure upon the returning veins, and a long continuance in the erect position, by the effect of gravitation, often cause a distention of the hemorrhoidal vessels that results in piles. To the above list may be added all causes of irritation of the rectum, whether direct or indirect, such as acrid purgatives and especially aloes, irritating injections, the frequent use of suppositories, acrid alvine evacuations, ascarides, violent jolting on horseback, dysentery, inflammation of the prostate or of any of the pelvic viscera, and venereal excesses. The causes which act by mechanical violence are long and severe straining at stool, and the difficult passage of hard fecal matter through the anus. But piles probably have their origin more frequently in constipation of the bowels than in any other source. This operates in various ways in producing them, but chiefly by the pressure of the accumulated and hardened fæces upon the returning veins, and by the straining, violent compression, irritation, and even laceration they occasion during their evacuation.

Piles are very rare in children before the age of puberty, and are most common between the thirtieth and fiftieth year. Males are more subject to them than females, if we leave out of consideration pregnant women, in whom they are very frequent.

Treatment.—In relation to the treatment of piles, it is proper first to consider what effect their cure may have upon the general health, and how far we may venture upon their removal with safety. They have been considered as an outlet through which various morbid tendencies were allowed to expend themselves, and the premature closure of which might bring these tendencies into injurious action elsewhere. There can be little doubt that this opinion is in some degree true. The hemorrhoidal effort depends on a general disordered condition, which, if not directed to the rectum, would find some other point upon which to expend its force. This is the case whether the piles are or are not attended with a

discharge of blood. But when bleeding from the hemorrhoidal tumors has been frequent, long-continued, and considerable, there is the additional consideration, that the system has in some measure accommodated itself to these discharges, and, in order to supply the loss, it has acquired the habit of elaborating blood more rapidly, so that the danger of plethora from their arrest would be superadded to that of the morbid tendency in which the piles originated. The complaints which are most to be feared from the cure of piles are apoplexy and pulmonary hemorrhage; and when a predisposition to these affections is known to exist, it should always be allowed to have some weight in the decision of the practical question. But as piles themselves, when severe, sometimes materially interfere with the general health, it is necessary to weigh carefully the opposing considerations, and to strike the balance between them. Should the danger of the very serious complaints above alluded to seem to outweigh the inconvenience of the hemorrhoidal affection, and its direct injurious influence on the health, it will be better to confine our efforts to the alleviation of the symptoms than to attempt a radical cure; and, in cases in which the latter course is pursued, the propriety is obvious of counteracting the morbid tendencies by a proper regulation of the diet, and the use of suitable depletory or revulsive means, as bleeding, saline purgatives, and blisters or issues. In all instances, however, where the hemorrhoids are purely a local affection, they cannot be treated too promptly; and the number of cases is comparatively few in which, though connected with some constitutional derangement, they may not be removed with safety, if care be taken to obviate the possible evil by suitable precautionary measures. So far as the treatment is directed to the removal of the causes, it may be carried into effect without the least hesitation.

In the medical treatment of piles, the first object is to remove the causes. Attention should therefore be paid to the condition of the system, and any existing plethora or general excitement, which may act as a predisposing cause, should be corrected by saline cathartics, and an antiphlogistic

regimen. One or two doses of sulphate of magnesia, and a diet exclusively of vegetable food, will often be sufficient to relieve that hemorrhoidal effort of system, and consequent congestion of the rectum, which lead to a paroxysm of piles.

As constipation is the most productive cause of piles, so its removal is the most important indication; and the complaint may often be effectually cured by keeping the bowels regularly open, and the feculent discharges in a soft, unirritating condition. This is best done by a proper regulation of the diet, and by the use of mild laxatives. (See CONSTIPATION.) Among the best of these are cream of tartar and sulphur, equal parts; or confection of senna and sulphur, which may be given separately or together, and may be usefully combined with bitartrate of potassa when the tumors are inflamed. The laxative may be given at bed-time, so as to operate gently in the morning.

In connection with the use of laxatives, attention should be paid to the correction of those habits of the patient which tend to produce and maintain the disease. High-seasoned food, alcoholic drinks, and strong coffee should be avoided; moderate exercise should be taken both on foot and on horseback; the patient should not sit habitually on soft cushions, nor sleep too warmly in feather beds; the use of acrid purgatives, especially those containing aloes, of warm emollient or stimulating enemata, and of the warm hip-bath, should be discouraged; and care should be taken to correct torpor or congestion of the liver, if this be one of the complications of the case. Acrid secretions should be removed by castor oil, and acid in the bowels by magnesia. Irritations in the bowels or neighboring pelvic viscera should be corrected as far as possible, and those practices carefully shunned which tend to produce such irritations.

While removing the causes of piles, we may also advantageously direct our remedies immediately to the seat of disease. One of the most efficacious means of cure is the injection daily, after the bowels have been evacuated, of half a pint or more of cold water into the rectum; and by

a perseverance in this plan for several months, with the use of laxatives if required, cures have been effected even in very unpromising cases. Care should be taken not to irritate the rectum by an unskilful introduction of the pipe. Sponging the anus with cold water every morning and evening will also be found useful.

Should the tumors be inflamed, rest in a horizontal posture, with lotions of cold water, or lead-water; and, when the pain is very severe, liniments, ointments, or cataplasms containing opium, hyoscyamus, belladonna, or stramonium, or decoctions of poppy-heads or hops, should be employed. These anodyne applications are not only useful by allaying pain, but contribute to a cure by obviating the tenesmus and straining, which tend so strongly to sustain and aggravate the complaint. When the inflammation is not acute, benefit may sometimes be obtained from astringent applications. Ointment of galls with opium may be used when the tumors are external; decoction of galls or oak bark, or infusion of catechu or kino, when they are internal. If the internal piles have protruded, and do not return of themselves, and cannot be returned by the patient, the practitioner must endeavor to reduce them by placing the patient on his hands and knees, anointing the parts well with unctuous matter, then making gentle and uniform pressure, so as to force out the blood, and, lastly, introducing by his hands the diminished tumor within the sphincter. Should he not succeed by these means, he may apply cold water to the part in order to produce contraction, or let out the blood by means of needles or a lancet, and then restore the piles. In cases where strangulation and gangrene have taken place, poultices with laudanum should be applied locally, and the patient kept under the influence of opiates, with wine, quinia, and a nutritious diet, if necessary to support his strength.

When the hemorrhage is so copious as to require treatment, if it be acute, the patient should lie on his back, cold water should be injected into the rectum, and applied externally, and nitre with antimonials, or the acetate of lead, given by the mouth. If these measures fail, a solution of alum

or a strong vegetable astringent infusion, or the two combined, may be used in the form of enema. In more chronic cases, the same astringents may be employed, and recourse may at the same time be had to the internal use of oil of turpentine, in the dose of from fifteen to thirty drops three or four times a day, or of copaiba in the same dose, or of ergot to the amount of two scruples or a drachm daily in divided doses. The oil of turpentine has been especially lauded in obstinate cases of hemorrhoidal flux.

When other means fail, and the health of the patient suffers, or the inconvenience of the tumors is very great, recourse may be had to their extirpation either by the knife or ligature, or by both united. The evacuation of the tumors by incision, or by the removal of a portion of their summit by the bistoury or a pair of bent scissors, and their destruction by different caustics or the actual cautery, are modes of cure which have had their advocates.

Should the cure of piles be found to have occasioned any serious injury to the health, endeavors should be made to restore the hemorrhoidal disease by aloetic purgatives, irritating injections, and the use of the warm hip-bath.

PHLEGMASIA DOLENS—MILK-LEG.

This affection occurs generally in women after delivery, but sometimes also in those who are unmarried, and occasionally even in males. It usually commences about a week or two after delivery, though the interval may be much longer. In some instances it is preceded by febrile symptoms, in others is ushered in with a chill occurring simultaneously with the local affection, and in others again, and these are the most numerous, commences with pain. This is usually felt first in the loins or lower part of the abdomen, whence it extends to the groin, and thence to the vulva, and down the thigh and leg. In some instances, however, it shows itself first in the lowest part of the limb, travelling upwards, and in others in two distant points at the same time. At first it may only be an aching sensation with soreness, and a sense of weight or stiffness in the part; but it soon increases and becomes acute, severe, and

sometimes even excruciating, being felt most along the course of the internal cutaneous and crural nerve in the thigh, and of the posterior tibial in the leg. The limb soon begins to swell, and in the course of forty-eight hours is sometimes of twice its usual dimensions. The labium pudendi is similarly affected. With the swelling, the acuteness of the pain generally abates in some measure, but the soreness continues, and is much aggravated by every movement. The limb is in general slightly flexed, and quite motionless as if paralyzed. The swelling, when at its height, is uniform over almost the whole limb, which is of an unnatural whiteness, shining, hot, and firm and elastic to the touch. It does not pit upon pressure, except sometimes at the commencement and the decline of the swelling. When cut, it exudes only a small quantity of fluid. Sometimes red lines are observed in the course of the crural veins, and red patches here and there upon the limb; but the color, as just stated, is usually white. The tenderness is greatest along the femoral vein, which may almost always be felt like a hard cord. Sometimes this hardness is confined to the groin, sometimes may be felt all the way down the thigh and leg, and in other instances occurs in distinct parts of the course of the vessel. The uniformity of the cord is interrupted by occasional nodules, arising either from inflamed cellular tissue, or coagula in the cavity of the vessel. The lymphatic glands of the groin are usually hard and swollen. Both limbs are seldom attacked at the same time; but it sometimes happens that one becomes affected after the recovery of the other. The left is more frequently attacked than the right.

The disease is said sometimes to extend to the arm of the affected side. It is attended with a very frequent pulse, often with nausea and vomiting, and other febrile symptoms, and sometimes with suppression of the lochia and the milk.

Phlegmasia dolens generally terminates favorably, though constitutional symptoms occasionally make their appearance, such as have been ascribed to the entrance of pus into the circulation, and the patient sinks. The acute symptoms

are in most cases over in two weeks; but the limb often continues more or less swollen or hard, for a long period, sometimes even for life. In favorable cases, the symptoms gradually subside; the pain, hardness, and swelling abate; and the blood, which can find no passage through the large internal veins of the limb, is returned by the superficial vessels, greatly enlarged for the purpose. Sometimes erysipelatous inflammation occurs in the limb, and abscesses form in different parts of it, as well as in different parts about the pelvis, greatly increasing the danger of the patient, and, in some instances, proving fatal.

Affections in most respects identical with phlegmasia dolens have been observed in women after abortion, and in others affected with malignant ulceration or other organic disease of the unimpregnated uterus, or in whom that organ has suffered violence, as from the application of the ligature for the removal of polypus. Men, too, have been similarly affected in consequence of organic disease in the pelvic viscera, or injury inflicted on these parts. The same thing has also been observed in dysentery and fever.

Treatment.—The pulse in this disease is not usually strong enough to call for the lancet, but leeches along the affected vein are of the greatest importance. They should not only be applied once, but should be repeated over and over again, if the symptoms of inflammation should persevere; they are in general most effectively applied in the groin and upper part of the thigh, over the femoral vein; but they should also follow the track of the tender and hardened vessel, wherever it can be traced. The leeches may be followed by cold saturnine lotions, applied by means of linen cloths, or by warm fomentations and emollient cataplasms, according as one or the other of these measures is found most comfortable to the patient. The local vapor bath has sometimes proved salutary. To relieve the very severe pain, anodyne substances, such as the preparations of opium, hyoscyamus, belladonna, conium, stramonium, or hops, may be incorporated with the refrigerant or emollient applications. Perhaps no remedy will be found to act more promptly in relieving the pain, as well as in subduing the

inflammation, than the chloroform liniment freely sprinkled on cloths wrung out of a warm infusion of mullen leaves. When the bowels are not already too much disturbed, as not unfrequently happens in bad cases of the disease, saline cathartics may be employed, alternated with diaphoretic doses of tartar emetic, the neutral mixture, and other internal refrigerant remedies. Should the disease not seem disposed to yield, calomel or the blue-pill may be given, in combination with opium or hyoscyamus. Throughout the complaint, it is often necessary, or at least advisable, to control the severe pain and relieve restlessness by anodynes, and especially opium, which may be combined with ipecacuanha in the earlier stages. After the subsidence of the violent symptoms, if the swelling should remain hard, and appear disposed to assume an indolent character, blisters should be employed; and when leeches cannot be procured, they may be resorted to at an earlier period. A spare diet, and perfect rest of the limb in the horizontal position, are also essential parts of the treatment. When great prostration comes on, it is necessary to support the system by stimulant remedies and a nutritious diet. Wine-whey, and animal broths and jellies, are now appropriate; and these general measures may be employed, even though it may appear proper to make efforts for the relief of the inflammation by local depletion. The fever syrup is peculiarly appropriate in this stage of the disease, either alone or combined with quinine.

During convalescence, care should be taken not to employ very energetic measures for hastening the reduction of the tumefaction. Time is required for the sufficient enlargement of the new veins, through which the blood must make its exit from the limbs. Premature irritation might endanger an increased inflammation of the part. But, with this caution, ointments of iodine or mercury, or of both, may often be usefully applied with the view of promoting absorption; and blisters may be resorted to with the same object. Should considerable œdema remain, it may generally be corrected by bandages, and the use of diuretics, such as squill and bitartrate of potassa.

FATTY DEGENERATION OF THE KIDNEY—BRIGHT'S DISEASE.

In 1827, Dr. Bright first pointed out the frequent connection of anasarca and other dropsical affections with a peculiar disease of the kidneys, the prominent character of which is the appearance of albumen in the urine, and the deposition of a peculiar granular matter in the substance of the renal gland, together with the gradual atrophy of its cortical and tubular structure. Hence this affection is commonly known as *Bright's disease*, or as *granular degeneration of the kidney*. The investigations thus commenced have now been perfected by Dr. George Johnson, and I avail myself of his labors.

The appearances in the urine which characterize this disease are—a scanty secretion, which is highly albuminous, and of low specific gravity; it is generally, in the early stages, free from sediment. After a period, variable in different cases, while the general characters of the urine remain unaltered, there appears a light, cloudy sediment.

The chief *symptoms* produced by this disease are—gradually increasing debility; inflammation of the serous membranes; anasarca of the limbs, with dropsy of the different cavities; and ultimately coma, which soon ends in death. It is often the consequence of acute nephritis; or it may arise from scrofula, bad living, constant exposure to cold and wet, intemperance, etc.

In the *treatment*, we can do little more than relieve symptoms. The diet should be regulated; and abstinence from intoxicating drinks, starch, sugar, and perhaps fatty articles of food, insisted upon. In other respects, the rules laid down in dyspepsia must be attended to.

DYSPHONIA CLERICORUM—CLERGYMAN'S SORE THROAT.

Dysphonia clericorum, or clergyman's sore throat, is frequently a nervous complaint, being unattended, at least in its early stages, by any organic lesion, but consisting rather of irritation of the investing membrane of the fauces. Subsequently, however, a series of morbid changes takes place, such as congestion, inflammation, or relaxation of the

mucous membrane, enlargement of the tonsils, elongation of the uvula, and irritation, inflammation, morbid deposit, and ulceration of the mucous follicles. Dr. Horace Green, of New York, has described this affection when far advanced as consisting of a diseased condition of the glandular follicles of the mucous membrane of the throat and windpipe, commencing usually in the mucous follicles of the isthmus of the fauces and of the upper portion of the pharyngeal membrane, and extending by continuity until the small glands of the epiglottis, larynx, and trachea are extensively involved in the morbid action. He calls it *follicular disease of the pharyngo-laryngeal membrune.*

Symptoms.—These consist of an uneasy sensation in the upper part of the throat, with continued inclination to swallow, as if there were some obstacle in the œsophagus which could be removed by deglutition. The patient also makes frequent attempts to clear the throat of phlegm by coughing, hawking, and spitting; he will point to the larynx, too, as being the seat of pain. At the same time, the voice undergoes an alteration; there is loss of power and hoarseness; sometimes complete aphonia, especially towards the evening. On examining the throat and fauces, we shall find these parts presenting an unhealthy, slightly raw or granular appearance; the mucous follicles will be visible, sometimes filled with a yellowish substance, and a viscid muco-purulent secretion will be seen adhering to the palate and to the edge of the velum pendulum palati.

This sore throat may exist alone, or it may accompany or follow laryngitis, bronchitis, or phthisis. Clergymen, public speakers, actors, singers, etc., are most liable to it.

Treatment.—In its early stages, when merely a nervous affection, the treatment must consist in the use of tonics, especially iron and quinine, cold shower-baths or sea-bathing, and temporary change of scene and occupation. When the disease is further advanced, a combination of internal with local remedies will be necessary. Iodide of potassium, iodide of iron, iodide of zinc, tonics, and opiates, will prove of advantage; but the best internal remedy, according to my experience, is the combination of iodide of

potassa with sarsaparilla and fever syrup, recommended in scrofula. The local treatment consists in the application of a solution of nitrate of silver (two to four scruples to the ounce of distilled water) to the diseased parts. When the tonsils remain enlarged and indurated, as they often do after this disease, as well as after tonsillitis, various astringent gargles and inhalations, preparations of iodine, and the solid nitrate of silver have been employed. Not unfrequently, permanent and effectual relief will only be obtained by the excision of one or both of these glands.

But it is much easier to prevent the formation of this disease than to cure it; which may easily be done by observing the precaution of avoiding any unnecessary strain upon the vocal organs. If the voice be made to keep within the limits of an octave in music, no injury will be sustained, however loud and strong the tone may be. But if the speaker cannot retain sufficient presence of mind to control his voice within proper limits, or to regulate his tones by the musical scale, and should find on ceasing that some uneasiness has been created about the throat, he should not adopt the absurd practice of enveloping his neck with a large handkerchief, or shawl, and by *sweating* produce still further debility and relaxation, as this will inevitably invite congestion, which will easily be converted into irritation or inflammation; but, on the contrary, let him at once apply cold water to the throat, and then rub it with a dry cloth until some redness is produced. If these simple directions are followed, no fear need be entertained of this very annoying disease, which is yearly driving from the pulpit many of its brightest ornaments and most efficient laborers.

INTESTINAL WORMS.

There are five species of worms occasionally found inhabiting the intestinal canal; of which three possess an alimentary tube, and are therefore called hollow worms, and two which have no abdominal cavity, and hence termed solid worms.

In the first class we have—

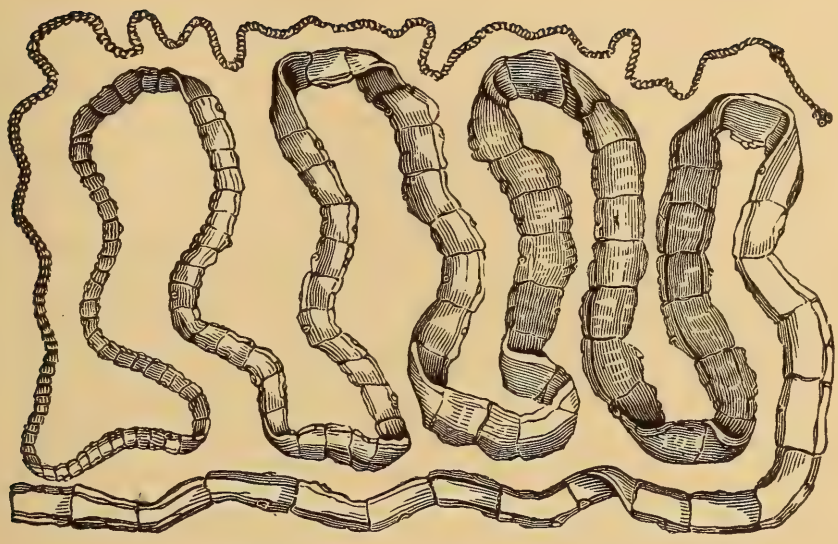
1. The long thread-worm, usually found in the cœcum and large intestines, measuring about two inches in length, and having a very slender body. It is often found in considerable numbers, even in the intestines of healthy persons.

2. The large round-worm is found in the small intestines, especially of ill-fed children. It somewhat resembles in size the common earth-worm, varies in length from six to nine inches, and is of a light-yellow color. Although the usual habitation of this worm is the small intestines, yet it may pass into the stomach and downwards into the colon; and consequently be vomited in the one case, or passed with the stools in the other. Sometimes these worms are very numerous. The symptoms which it gives rise to are thirst, disturbed sleep with grinding of the teeth, pallid countenance, fetid breath, swelled belly, emaciated extremities, depraved appetite, slimy stools, itching of the nose, tenesmus, and itching of the anus.

3. The small thread-worm is found in the rectum, and is the smallest of the intestinal worms, averaging usually about a quarter of an inch in length. It gives rise to intolerable itching and irritation about the anus, tenesmus, depraved appetite, picking of the nose, depraved breath, and disturbed sleep.

In the second class we find—

1. The common tape-worm of this country, which exists in the small intestines, varying in length from ten to one hundred feet, and in breadth from one line, at its narrowest part, to four or five at its central or broadest portion. The head of this parasite is small and flattened, having in its centre a projecting papilla, armed with a double circle of hooks, around which are four suckers or mouths, by which nourishment is imbibed; the generative apparatus consists of a ramified canal or ovarium containing the ova, and occupying the centre of each joint. The symptoms of its presence are not very striking, its existence being generally unsuspected until single joints are passed in the stools; in many cases, however, there is a continual craving for food,



LONG TAPEWORM. (*Tænia solium.*)

TRICHINÆ. (*Tricocephalus dispar.*)

debility, pain in the stomach, emaciation, and itching about the nose and anus.

2. The broad tape-worm is almost peculiar to the inhabitants of Switzerland, Russia, and Poland. It differs from the common tape-worm in having its segments of a greater breadth than length. It is very rarely met with in this country, but is so occasionally.

Symptoms.—The most common symptoms produced by these worms are—colicky pains and swelling of the abdomen; picking of the nose; itching of the rectum and fundament; foulness of the breath; irregular bowels; grinding of the teeth at night; and voracious or impaired appetite. The most conclusive sign is the passage of some of the worms or joints of them in the fæces; and indeed without this, the other symptoms are but of little value.

Treatment.—Two indications are presented: *first*, to expel the worms from the bowels; and, *secondly*, to prevent their reproduction.

The *first indication* may be fulfilled by active purgatives, which expel them by the increased activity they give to the peristaltic movement, or by anthelmintic medicines, which favor their expulsion through the ordinary contraction of the bowels, by rendering them less able or less disposed to resist this contraction. But a more effectual plan is to combine these two modes, thus at the same time bringing a greater force to bear upon the worms, and diminishing their powers of resistance. The purgatives and anthelmintics may be given conjointly; or the latter may be administered night and morning for a few days, and then followed by the former.

Anthelmintics are medicines which prove disagreeable to the worms, and thereby dispose them to leave the bowels, or so debilitate them as to disable them from maintaining their position, or finally destroy them, and thus expose them to the expulsive powers of the intestines, or the digestive powers of the stomach. They may produce these effects by acting on the susceptibilities of the worm as medicines and poisons act on the human system, or by mechanically bruising or wounding it. Among those which

operate in the former method may be mentioned, *pink-root, male fern, the bark of pomegranate root, walnut-rind, common salt, camphor, various bitters,* and numerous substances characterized by containing a strongly odorous or highly stimulating volatile oil, as *turpentine, copaiba, savine, chenopodium* or *American wormseed, tansy, rue, wormwood, garlic,* and *assafœtida.* Several of the volatile oils themselves are still more efficacious, especially *the oil of turpentine* and *that of chenopodium.* Electricity passed through the bowels, in successive and somewhat violent shocks, has been supposed to injure or kill the worms, and favor their expulsion by cathartics. The mechanical anthelmintics are chiefly *cowhage,* which wounds and sometimes destroys the worms by the sharp bristles of its pods, and the *powder of tin* or of *zinc,* which bruises or scratches them by its angular particles.

In the choice of purgatives, attention should be paid to their anthelmintic properties. Thus, *calomel* is a powerful vermifuge, much more so than can be satisfactorily explained by a reference to its mere cathartic power. The probability is, that it proves disagreeable or injurious to the worm by the acrid property of the bile which it causes to be secreted. *Aloes* is also thought to possess vermifuge properties, independently of its purgative action, owing to its intense bitterness; this property being considered by some as extremely offensive to worms. The same may be said of *colocynth.* The *oil of turpentine* in very large doses, and the *bark of pomegranate root,* unite purgative and anthelmintic powers. Considered independently of anthelmintic properties, those cathartics are the most powerfully vermifuge which act with greatest energy on the muscular coat of the bowels. Senna, jalap, scammony, aloes, colocynth, gamboge, croton oil, and elaterium have been used, variously combined, and in various modes of preparation; but, except in very obstinate cases of worms, it is better to trust to the proper anthelmintics, with the less violent of these cathartics, than to endanger inflammation of the bowels, or exhaustion of the patient, by a resort to the most energetic.

To meet the *second indication,* that, namely, of preventing the reproduction of the worms when once destroyed or

evacuated, it is necessary to attend to the food and drink of the patient, and, if the digestion is feeble, to promote that function by tonic medicines, exercise, and other suitable measures. Excess in eating, indigestible substances, unwholesome food of all kinds, and unwholesome drinks, should be avoided. Of the tonics, the different preparations of iron are probably the most efficacious, though they may be advantageously combined with the simple bitters, as gentian, quassia, and columbo. The bitters in which the tonic principle is associated with an anthelmintic volatile oil, as wormwood, tansy, and rue, were formerly much used, and are probably not without a peculiar efficacy. I have known several families in which the younger members were regularly given worm-seed near every full moon, and I have noticed that no worm cases ever occurred in these families. It is usually fried in bacon grease, and then mixed with molasses. The dose may be greatly varied, as no harm seems to follow its use. When there is acid in the stomach or bowels, lime-water, or one of the alkaline carbonates, may be usefully associated with the bitters. The rules applicable to the treatment of dyspepsia may be considered as in force in the present case. Very often, however, after the expulsion of the worms, all unpleasant symptoms cease, and no further treatment is necessary.

ROUND-WORM—ASCARIS LUMBRICOIDES.

The round-worm generally inhabits the small intestines, but not unfrequently makes its way upward into the stomach, or downward into the rectum; and sometimes escapes from the alimentary canal by the mouth or by the anus. It occasionally enters other passages which communicate with that canal, having been found in the posterior nares, the trachea, the pancreatic and biliary ducts, and the gall-bladder. It is sometimes solitary, but more generally in considerable numbers; and two hundred have been known to pass from one patient in the course of a week. The worm is supposed to feed upon the intestinal mucus, which is usually copious where these parasites exist. It occurs

most frequently in children, occasionally in adults, and seldom in old persons. Of all the different worms that infest the bowels, this is by far the most common.

The symptoms are those already enumerated as resulting from intestinal worms in general. The most characteristic signs are perhaps a tumid abdomen, irregularity of the bowels, depraved appetite, picking of the nose, and grinding of the teeth in sleep. When these worms exist in the stomach, they occasion peculiar deranged sensations in the epigastrium, with nausea, and frequent retching, and motions on the part of the patient as if he were choking from something in the throat, produced probably by attempts of the worm to enter the œsophagus, or by its actual presence in that tube. When these motions occur in an infant, the round-worm may be suspected to exist in the stomach. But the only certain proof that a patient is or has been laboring under this worm, is the sight of it after it has passed from the bowels or been discharged from the stomach. It sometimes comes away spontaneously from the anus, and is not unfrequently evacuated with the fæces, thus affording the requisite evidence of its existence.

The general course of treatment for worms already described is applicable to this species. A good remedy at the commencement, and one which will alone, in a great majority of cases, produce an evacuation of the worms, is an infusion of senna and pink-root, with sulphate of magnesia to correct the griping property of the cathartic, manna to cover the taste, and fennel-seed or other aromatic to correct the flavor, and to render the whole more acceptable to the stomach. This infusion may be given in a small dose once or twice a day, so as to produce two or three evacuations in the twenty-four hours, and may be continued daily, or every other day, for one or two weeks, or even a longer period, if necessary, and it do not too much debilitate the patient. Formula: Senna and pink-root, each half an ounce; epsom salts, two drachms; fennel-seed, two drachms; manna, one ounce; boiling water, one pint: let steep in a covered vessel two hours. Dose: for a child two years old, about half an

ounce; for adults, from two to four ounces. A little savine, or other vegetable anthelmintic, may sometimes be advantageously added to the infusion, in obstinate cases.

If evidences of deranged biliary secretion exist, or the bowels be too irritable for the use of the above infusion, or if the infusion has failed, or any difficulty exists in the way of its exhibition, calomel may often be advantageously resorted to. This is, indeed, one of the most efficacious anthelmintics, and has the great advantage, in the cases of children, of easy administration. It is best given in connection with powdered pink-root, and followed, at a proper interval, by castor oil. To a child, four grains of calomel and sixteen of pink-root may be given at bed-time, and followed by a dose of castor oil in the morning; and the remedy may be repeated once and again, if required, at intervals of three or four days. In adults, the calomel and pink-root may be associated with some quicker cathartic, as jalap, scammony, or the compound extract of colocynth.

Another plan is to administer, morning and evening, for several successive days, a dose of some anthelmintic, and afterwards a purgative dose of calomel or other cathartic, to expel the debilitated or dead worms. For this purpose, in the case of a child, half a fluidounce or a fluidounce of the officinal infusion of pink-root, or from ten to twenty grains of the powder; from twenty to forty grains of powdered worm-seed, (*chenopodium*,) or from five to ten drops of the volatile oil; from five to twenty drops of the oil of turpentine; or a drachm of an electuary made by incorporating the bristle of cowhage with syrup or molasses, may be employed. The oil of turpentine is peculiarly efficacious in stomach worms. In our Southern States, where the Pride of China grows, the bark of the root of that tree is much employed. Four ounces of the fresh bark are boiled with two pints of water down to one, and a tablespoonful is given to a child for a dose. The cedar apple, an excrescence upon the branches of the *Juniperus Virginiana*, or common red cedar, has been highly recommended, in the dose of from ten to twenty grains of the powder, repeated as above men-

tioned, and will often prove effectual. The above anthelmintics may be employed successively, one of them sometimes succeeding when another has failed.

In nervous cases, advantage may result from combining assafœtida, garlic, or valerian, with the more decided anthelmintics. When the digestion is feeble, the vegetable bitters, or chalybeate preparations, should be employed in a similar connection, and, in case of the existence of an excess of acid in the stomach or bowels, antacids should also be added.

THREAD-WORM—ASCARIDES.

The peculiar seat of ascarides is the rectum, but they sometimes also inhabit the colon, and are said to have been occasionally seen in the stomach. In the female they sometimes enter the vagina, giving rise to severe irritation and intense itching, and even to symptoms of nymphomania. They are usually in great numbers, and multiply very rapidly. Persons of all ages are liable to them, but they are most frequent in children.

Their characteristic symptom is an itching sensation at the anus, which is often distressing and almost insupportable, especially in the evening, and after the patient has become warm in bed. Tenesmus, mucous or bloody discharges, and small tumors about the anus, are also among their effects. These local symptoms are in some cases all that are exhibited; but the general derangements which have before been described as produced by worms, may proceed also from this species. Disorder of the nervous system is especially apt to occur, from the intense local irritation occasioned by the movements of the worms; and this disorder amounts sometimes in children to general convulsions.

Treatment.—Medicines taken by the mouth are usually less efficacious in this than the other species of worms. The most successful plan is to address the remedies immediately to the rectum, and, having weakened or destroyed the worms by anthelmintic enemata, then to procure their

expulsion by cathartics taken in the ordinary way, or thrown into the bowels. The substances most advantageously employed in enemata are oil of turpentine, aloes, common salt, decoction of rue or wormwood, infusion of tobacco, sulphuretted waters, and vinegar. Some one of these, or some combination of them, should be injected daily, with a sufficient quantity of water, and, after several days, should be followed by a dose of calomel or aloes, or other brisk cathartic. A dose of sulphur, taken every morning before breakfast, has been found very useful. Advantage has also been derived from the introduction into the rectum of a bougie smeared with mercurial ointment, or of a candle or piece of fat pork tied to a string, which, after having been allowed to remain for some time, is withdrawn with the worms adhering to it. In adults, much relief may sometimes be obtained by the greased finger employed in like manner. Injections of olive oil, or other mild fixed oil, and the external application of creosote incorporated with some unctuous matter, have been recommended as palliative measures. The frequent local use of cold water also allays the itching. It is advised to avoid exposure to heat, or the use of stimulating articles of food. When the worms have found their way into the vagina, injections of cold water with vinegar and pink-root tea are recommended.

LONG THREAD-WORM—TRICHOCEPHALUS DISPAR.

This worm is found most frequently in the cæcum or other part of the colon, but sometimes also in the small intestines, either loose, or with its anterior capillary portion inserted into the mucous membrane. It is often observed, in great numbers, in the bodies of individuals who have died suddenly, by accident or from some acute disease, and who have exhibited no evidences of its existence during life. It does not appear that there are any peculiar symptoms which indicate its existence, or that any special course of treatment is to be pursued. Should the ordinary signs of worms be present, the remedies adapted to the ascaris lumbricoides may be employed.

COMMON TAPE-WORM, (TÆNIA SOLIUM)—BROAD TAPE-WORM, (TÆNIA LATA.)

Between these two worms there seems to be no such difference in their habits, residence, symptoms, or treatment, as to require a distinct practical consideration. The following observations may, therefore, be considered as applicable to both kinds. The broad tape-worm is said to be found only among the inhabitants of Switzerland, Poland and Russia, or in individuals who have been in those regions; the tænia, or common tape-worm, is met with everywhere.

They inhabit chiefly the small intestines, and are often solitary, but sometimes also in numbers, though less numerous than the other intestinal worms. They occur during childhood, but more frequently after puberty, and are very rare in old age. Females are more subject to them than males. They are much more common in some countries than in others, and are comparatively rare in the United States, at least within the limits of my observation. Perhaps this result may be ascribed to the abundance of wholesome food within reach of everybody in this country. Tape-worms often exist in large and tangled bunches, so as to interfere mechanically with the proper performance of the intestinal functions.

Symptoms.—In some instances the tape-worm has long existed in the bowels without producing any very prominent symptoms; but it generally occasions great discomfort, and sometimes materially deranges the health. There is not often perhaps very acute pain; but the sensations experienced are scarcely less distressing than pain, and are often attended with great depression of spirits or irritability of temper. These sensations are referred to the movements of the worm.

Treatment.—Tape-worms have the power of retaining their place very tenaciously in the bowels, possibly in consequence of holding on to the mucous coat by means of suction. They often continue for years to harass the patient, who passes from time to time separated joints, or even a whole worm, without getting entirely rid of the troublesome para-

site. The duration of the affection, according to the observation of Wawruch, varies from a few months to thirty-five years. It is considered important that the head of the worm should be expelled, as, until this happens, there is no certainty that the evil has ceased. Many different plans of treatment have been employed with asserted success; most of them including active purgation, and the use of substances calculated to injure or destroy the worm. Whatever method of cure is followed, much pain is often experienced by the patient just before the expulsion of the worm, which is ascribed to the violent movements of the animal, under the influence of the medicine. It is deemed best to prepare the patient by a somewhat restricted diet upon the day preceding the use of the medicine, which should be given in the morning upon an empty stomach. By some it is even advised to precede the anthelmintic, for four or five days, by a spare diet, consisting chiefly of liquids, and by the use of saline or other laxatives, so as to leave the worm with as little protection as possible from the alvine contents against the influence of the active purgatives, or the anthelmintics, which may be given for its expulsion. The following remedies are those which have attracted most notice.

The medicine at present probably most relied on is the *oil of turpentine*. This is given in large doses, and very often with the speediest and happiest effects. The quantity administered at once varies from half a fluidounce to two fluidounces, and much exceeds the dose of the medicine for ordinary purposes. But, in this large dose, the oil is thought to be less apt to produce constitutional disturbance or irritation of the kidneys; because, acting as a cathartic, it is less apt to be absorbed. The only inconveniences usually experienced are heat of stomach, some general febrile excitement, and a sense of fulness in the head; but sometimes it occasions headache, vertigo, a kind of intoxication or delirium, drowsiness, etc.; and these effects will occasionally continue for several days. They are most apt to follow when the medicine fails to act as a cathartic. The oil usually operates quickly upon the bowels, and brings the worm or

portions of it away dead along with it. The caution, however, should always be observed, if it do not purge in the course of two or three hours, to administer a full dose of castor oil, and to aid the action of the medicine, if necessary, by enemata. A good plan, in order to insure the cathartic action, is to give the two oils conjointly, half a fluidounce of the oil of turpentine being mixed with an ounce of castor oil, and the dose repeated in a few hours if it should fail to operate.

Perhaps next in value to the oil of turpentine is the *bark of pomegranate root*. Much published testimony exists in its favor. The fact that a living tapeworm, introduced into a decoction of the bark, immediately evinces great suffering by its writhings and contortions, and dies in the course of five minutes, while it is capable of living several hours in pure water, is a proof that the bark is poisonous to the animal. The remedy may be administered in powder or decoction; but the latter form is usually preferred. Two ounces of the bruised bark are macerated in a quart of water for twenty-four hours, and the mixture then boiled down to a pint. A wineglassful is to be given every half-hour, hour, or two hours, until the whole is taken, or a powerful action is produced. The remedy often produces nausea and vomiting, and generally purges, and the worm comes away with the stools. It is recommended to diet the patient strictly, and give a dose of castor oil on the preceding day, and, if the decoction should not purge, to follow it with castor oil or an enema. Should the worm not be discharged at the first trial, it is recommended to repeat the remedy daily for three or four days, or until the desired effect is obtained. Various other remedies have been recommended, with which I will not trouble the reader.

PROLAPSUS ANI.

Of this complaint there are three varieties: in one the rectum, together with all its tunics, falls downward; in another, only its internal coat is protruded; and in the third species, an upper portion of the intestine descends into the lower one, so as even sometimes to protrude at the anus.

The last case is termed a *volvulus*, or *intussusceptio*. When we speak of a *prolapsus ani*, we commonly mean the first kind of disorder. As the intestine descends, it becomes turned inside out: hence, the outside of the protruded part is in fact the inside of the gut.

There are two kinds of causes by which the *prolapsus* is produced, viz., such as weaken the sphincter and parts retaining the rectum in its situation, or such as force the intestine downward. Those of the first description are only predisposing ones; but the latter causes often occasion a *prolapsus* quite independently of the others. Costiveness and hardened fæces, which distend the rectum and *sphincter ani*, and emollient clysters, which relax these parts, are the chief predisposing causes. The *prolapsus ani* is mostly seen afflicting children and aged persons; the first on account of the relaxation and elasticity in their systems, the latter on account of the want of muscular power in the *sphincter ani*. When the rectum has once descended, a weakness and relaxation are very apt to continue afterwards, occasioning a recurrence of the complaint from the slightest causes. Among the second class of causes, we have to enumerate long-continued inclination to go to stool, kept up by hemorrhoids; ascarides; a *fistula in ano;* a stone in the bladder; diarrhœa; labor pains, etc.

When the *prolapsus* is recent and inconsiderable, its reduction may frequently be effected by gentle pressure with the hand. But when the protruded portion of the gut is large, and the *prolapsus* has existed several hours, the reduction very often cannot be so easily accomplished. Then the following plan is to be tried: the patient, having emptied his bladder, is to place himself in a position in which he rests upon his knees and elbows. The operator is now to try to reduce the *prolapsus*, by making alternate pressure, first on one side, then on the other, of that portion of the gut which is nearest the opening, until the whole is returned. Though the whole may have been reduced within the anus, still the gut is ready to protrude again at the first opportunity. Hence, the prolapsed piece of intestine must be pushed farther upward than just within the anus.

Sometimes the reduction cannot be effected, on account of an incessant, involuntary, spasmodic straining. Here soft poultices and opiate draughts and clysters are indicated. A large quantity of hardened excrement in the large intestines may render reduction difficult; in this case, the object cannot be accomplished until the bowels have been emptied by clysters. When the prolapsed portion of the gut is very much swollen, its size may be lessened by applying leeches or cold lotions to it; or by making long-continued pressure before trying to reduce it. After the prolapsus has been reduced, the patient must keep himself for a time in a horizontal posture, for the intestine is very prone to fall down again. Also, to prevent this event, astringent clysters may be administered. But, above all things, it is essential to keep the bowels free from costiveness.

When reduction is long delayed, the tumor may become painful and inflamed. The same symptoms as attend a strangulated hernia, and even death, may follow the protraction of the case. The immediate cause is the constriction produced on the bowel by the *sphincter ani*. The proper line of conduct is to employ topical bleeding; cold lotions; and gentle, long-continued, equal pressure. If such measures should fail, and the dangerous symptoms increase, it is necessary to divide the *sphincter ani*, by means of a curved bistoury and a director.

Every *prolapsus* occasions a remaining weakness and relaxation in such parts as retain the bowel in its natural position; and for this reason the complaint, when neglected, often becomes habitual. A proper bandage and astringent clysters may here be of service.

The clysters are usually composed of the decoction of oak bark, with alum, port wine, etc.

When these fail, some benefit may be obtained from wearing the T bandage, with a piece of sponge applied as a compress to the anus. It is to be observed, however, that, though bandages keep up the bowel, a *volvulus* frequently follows their employment; and as they are of necessity taken off when the patient goes to stool, they present a very faint prospect of radically curing even the *prolapsus*

ani, as the bowel regularly descends whenever there is a motion. The patient should be cautioned to prevent the descent of the gut with his finger on this occasion; but he cannot always hinder the event.

When a *prolapsus ani* has been neglected, and has not been properly kept reduced, the protruded rectum often loses all vestige of its natural texture, and becomes indurated, exceedingly thickened, and, as it were, quite callous and insensible. The patient experiences no inconvenience, except what results from a large, hard tumor at the anus. Hence the disorder is usually left to itself. However, a long perseverance in a horizontal posture, frequent long-continued pressure, and the constant use of cold washes, have been known to diminish the size of such a tumor, so as to render its return practicable. If the large callous tumor should ulcerate, impede the exit of the fæces, or become in any other way exceedingly troublesome, it may be amputated.

VOLVULUS, OR INTUSSUSCEPTIO.

This is hardly to be distinguished from the *prolapsus ani*. The protruded intestine is not the rectum, but the colon. The cæcum, and even the ilium, may protrude out of the rectum; then, of course, the nature of the case is clear from the structure of these viscera. The parts may be returned into the rectum, but the case is incurable; for who can undertake to replace the colon, much less the other intestines, in their natural position?

WOUNDS, INJURIES, AND ACCIDENTS.

It cannot be expected that the subjects which might be properly considered under this head can be treated of fully, as that would include the whole science and practice of surgery, and would of itself make a large volume; only such as are of most frequent occurrence, and which can be managed without much surgical skill, and cases in which something must be done immediately which may save the life of the patient until scientific aid can be procured, will be considered here.

WOUNDS.

Wounds are different according to the kind of force by which they are made. When done by cutting with a sharp instrument, they are said to be *incised;* when by tearing, *lacerated;* and when by bruising, they are called *contused wounds.*

Our first attention is usually drawn to the bleeding or hemorrhage which attends injuries involving a division of blood-vessels of considerable size. This will usually be most profuse in incised wounds; for in those made by tearing or bruising, the divided ends of the vessels are always more or less closed, and the fibrin of the blood, by becoming entangled by the shreds of the rough extremity of the vessels, soon collects so as to form a *clot,* and impede or prevent the escape of the blood. In incised wounds, we must endeavor to bring about the same thing artificially: this may be done by bringing the divided surface firmly together, and confining it by compresses and bandages; or

by thrusting cloths into the wound, so as to form a plug. Many a wounded soldier has thus arrested the bleeding from extensive wounds by cramming his handkerchief into the wound, so as to plug the mouths of the bleeding vessels, which gave time for the use of other means. But if the wound has been made by a sharp instrument, and the divided vessel be an artery of considerable size, these measures will probably not prove sufficient to stay the hemorrhage, and compression of the artery between the wound and the heart must be made. This may be done in a limb by a ligature drawn tightly above the wound. If the position of the main artery can be ascertained, which is commonly easily done by feeling its pulsations, a compress, made by rolling up a piece of cloth or paper firmly, and placing it over the artery, and then tightening the bandage or ligature, will close the artery and stay the bleeding. Sometimes the bleeding can be stopped by firmly grasping the limb with the hand, if no assistance is at hand, or until a bandage and compress can be arranged. Even the great femoral artery has been controlled by firm pressure made with the thumb on it, at the point where it passes over the bone at the groin.

Very little skill is required for the management of incised wounds. After removing any dirt or foreign body from the wound, its edges should be brought accurately together and confined by means of adhesive strips, or a compress and bandage, or by all of these, so that the minute vessels may reünite by what is called union by the *first intention*. And even if the parts are not in exact contact, plastic lymph will soon be thrown out sufficient to fill the space, and the vessels will extend through this until they meet and form a reünion.

Nothing more is usually necessary to be done, except that it is well to keep the dressing wet with cold or tepid water; but if there is considerable suffering, laudanum or chloroform liniment, or even whiskey, may be combined with the water.

Now if the divided surfaces are not properly adjusted, and brought very nearly in contact, a reünion cannot take

place without the processes of suppuration and granulation, and of course the cure will be much slower. But nothing more is usually necessary, even in this case, than to keep down febrile excitement by cold lotions or poultices; or to stimulate the parts with strong spirits or chloroform liniment, if the action appears to be too low.

Recollect that pus is the bland, cream-like secretion which is always thrown out by a healthy granulating surface, and that it constitutes the mildest *dressing* which can be applied to the delicate and often sensitive surface, and therefore it is wrong to remove it, except that any superabundance may be gently washed away by squeezing a cloth saturated with tepid water, and holding it in such a position that the water will dribble over the sore. But it is often almost impossible to convince nurses that there is nothing poisonous or irritating in pus or matter, and they will pertinaciously persevere in removing it at each dressing, much to the discomfort of the patient; for the sore will usually continue to complain after the removal of the pus until a fresh secretion again covers the surface. Now in sores of a small extent the injury resulting from this practice is not great, but in case of large granulating surfaces, as from extensive burns or scalds, the irritation consequent upon forcibly removing the pus is often sufficient to produce great nervous disturbance, and seriously interfere with the recovery.

If the wound has been made by a tearing process, it is not so likely to heal by a reünion of the vessels, or through the medium of plastic lymph, but yet it often does, and therefore the edges should always be carefully adjusted and held in place by adhesive plasters, etc., and if the whole surface should fail to unite, a part probably will, and thus lessen the amount which will require to be repaired by granulation.

But if the injury has been made by a blunt or round body, the tissues will be more or less bruised, and this may be sufficient to cause a death of the part, or it may only weaken the tissues so as to cause the capillaries to give way to the pressure of the blood, and become engorged or

congested, and these two conditions may exist at the same time; in fact, when the force has been sufficient to destroy the life of a part of the tissues, another part beneath this, or outside of it, will always be found in the second condition. The prominent idea to be had in view, therefore, in the treatment of contused wounds, is to restore vital action in the weakened vessels and other tissues implicated; stimulants are therefore indicated, and no stimulant will be found to answer the purpose better than the chloroform liniment; for, while it excites the capillaries and other parts into vigorous life, it soothes the injured nerves, and thus relieves the suffering. But in the absence of the liniment, a pretty good substitute may be found in the common domestic remedy of brown sugar and spirits of camphor. But if the injury be serious, the liniment should be procured, as its application will cause a speedy separation to take place between the dead and the living tissues, and will also prevent any unpleasant odor from arising from the decomposition of the dead parts, and will secure healthy suppuration and granulation, and a rapid reproduction of the lost tissues.

Gun-shot wounds require no peculiar treatment, except that foreign bodies are often imbedded in the wound, which must be carefully removed, or they will keep up irritation and prevent a cure; unless, as is sometimes the case, a plastic material should become organized around the body, and form an insensible coat for it, in which case it may remain during the remainder of life without causing annoyance.

As the momentum of the ball is generally sufficient to kill a layer of tissue around the opening made by its passage, union without suppuration and granulation will rarely take place. The process of softening and casting off the dead tissue may be much hastened by daily injections of castile soapsuds, and then followed with chloroform liniment weakened with whiskey.

FRACTURES AND DISLOCATIONS.

As this work is not intended to supersede the necessity

of the services of the scientific surgeon, which indeed can never be done, nothing more will be necessary to be offered upon the above subject than a few plain directions which may be followed in the absence of professional skill.

FRACTURES.

Fractures are of two principal kinds, viz., *simple* and *compound*.

By a *simple* fracture is implied a division of one or more bones, without any external wound, caused by the protrusion of the ends of the fractured bones. It is called *compound* fracture when there is a laceration of the integuments, caused by the protrusion of one or both the ends of the fracture.

To these divisions of the subject some add a third, calling that fracture *complicated* which is attended with several breaches of continuity in the injured bone, and with the wound of any large nerve, blood-vessel, etc.

Fractures are also distinguished into *longitudinal*, *transverse*, and *oblique*, according to the direction in which they run.

SIMPLE FRACTURES.

The symptoms of fractures are exceedingly various, according to the bones which are broken; and though almost all writers have indiscriminately mentioned loss of motion in the injured limb, deformity, swelling, tension, pain, etc., as forming the general diagnosis of fractures, yet it is easily comprehensible, by any one acquainted with the structure of the body, that numerous fractures cannot prevent the motion of the part or occasion outward deformity; and though at first there may be pain in the situation of a fracture, no swelling and tension take place till after a certain period.

When therefore a limb is broken, and the event is not manifest from the distortion of the part, it is proper to trace with the fingers the outlines of the suspected bone, and wherever any unusual pain occurs, or any unnatural irregularity appears, to try if no grating or *crepitus* can be felt on

endeavoring to make one end of the bone rub against the other. When the arm or thigh bone is the subject of injury, a crepitus is felt almost as soon as the limb is touched, and in the case of the thigh there is considerable shortening of the extremity, unless the fracture be of the transverse kind. But when there are two bones, as in the leg and fore-arm, and only one is broken, the other continues to prevent the limb from being shortened and thrown out of its natural shape, so that a crepitus can only be felt by a proper examination with the fingers. I am aware that considerable harm and great unnecessary pain have been occasioned by an over-officious care to feel the grating of fractured bones, and, whenever the case is sufficiently evident to the eye, all further examinations may well be dispensed with. A fracture is an injury that is necessarily attended with considerable pain, and followed by a great deal of tension, and to increase these evils by rough handling of the part is above all things cruel and uncalled for.

In cases of fractures, the muscles of the limb are often affected with involuntary spasms, which put the patient to great pain, and, when the thigh-bone, arm-bone, or both bones of the leg or fore-arm are broken, occasion great distortion, while the violence of each spasm continues. To counteract this, and also to relieve the pain, a full dose of opium should be given, and a stream of tepid water poured for some time upon the limb.

Process by which Fractures are united.—The steps of nature in the union of broken bones are very similar to those which she pursues in the union of wounds of the soft parts. The vessels ramifying on the ends of the fracture first effuse coagulating lymph. This gradually becomes vascular; and as its vessels acquire the power of depositing earthy matter, it is ultimately converted into new bone, termed *callus*, which becomes the bond of union between the two portions of the fractured bone.

In order that the first connecting substance may speedily become organized and fitted for the formation of callus, nothing is so favorable as perfect quietude. Hence the

chief indication in the treatment of fractures, after the ends of the bones are replaced, is to keep them perfectly motionless: nature completes the rest. Different bones require different lengths of time to become firmly united; the ribs and clavicle unite as soon as any; the arm-bone is commonly tolerably firm in five weeks; but the bones of the leg and the os femoris seldom become perfectly strong in less than six weeks. These calculations refer, however, to adults; for in children fractures are cured much more quickly than in grown-up persons. The more vascular the bones are, the sooner is the union of their fractures accomplished.

General Principles in the Treatment of Fractures.—Relaxation of such muscles as have the power to displace the ends of a fractured bone extremely facilitates the reduction. A proper position is, indeed, the first thing to be attended to in almost all cases in which the broken extremities of the bone are not in even contact. The muscles are the powers which cause the displaced condition of the fracture, by drawing that end of the bone which is most movable out of its proper position in regard to that which is most fixed. Hence, in the extremities, the lower ends of fractures are those which are truly displaced by being drawn upward or to one side by the action of certain muscles, which have their origin and insertions above and below the injury. The muscles, therefore, which have the power of displacing the lower ends of such fractures are the powers which we ought principally to endeavor to counteract. In oblique fractures it is much more difficult to keep the ends of the bones in a proper state of apposition, because two oblique surfaces make no mechanical resistance to that effect (viz., retraction of the lower portion of the broken bone) which the strong muscles have a continual tendency to produce.

But relaxation of the muscles which have the greatest influence over a fracture is not only to be observed during the time of setting the broken bone; it is to be strictly adopted throughout the whole cure, at least until the two ends of the bone have become firmly united together. Were this

plan not followed, the fracture would very soon be displaced again by muscular action.

The best means for obtaining relaxation are, Dover's powder, a straight position of the limb, moderately tight bandaging, and effusions of tepid water.

But, much as position facilitates the favorable union of fractures, other means are necessary for maintaining the ends of the broken bone in their proper situation, and in a perfectly quiet state. Mechanical contrivances are employed to give that degree of support to the limb which the breach of continuity in the bone or bones has taken away. Instruments called splints are applied for this purpose, so as to form as it were a kind of steady, unyielding case for the limb. Splints ought to be made of strong materials, and of a sufficient length to reach beyond the two joints nearest the fracture; and they ought to be adapted in shape to the contour of the limb. They are generally secured by straps or tapes.

Since splints, however, are hard, and would give pain if firmly applied to the limb without the intervention of soft materials, it is customary to place a soft compress immediately over the fracture, and to apply what is termed an eighteen-tailed bandage, between which and the splints are also interposed pads filled with tow, or any other soft substances. Compresses are generally placed in situations under the splints where the pressure from such hard instruments is likely to give most pain.

When there is much swelling before the fracture is set, surgeons generally apply cold lotions of sugar of lead; and the linen employed for this purpose can be kept sufficiently wet (without taking off the splints) by squeezing the lotion out of a sponge into the interspaces between them. But I greatly prefer whiskey and water to the lead lotions.

COMPOUND FRACTURES.

A compound fracture is accompanied with a wound of the integuments, caused by a protrusion of the end of the broken bone.

When the wound is large and lacerated, when the bone or

bones are splintered into several pieces, and when the neighboring muscles have suffered a violent degree of contusion, the case must be considered as extremely dangerous, and the brightest talents are required to guide its treatment.

A limb in this condition, submitted to the inspection and judgment of the discerning and scientific practitioner, presents to him one of the most difficult cases, requiring a sudden decision, that is met with in surgery. Under these circumstances, no time should be lost, but the best surgical skill obtained as soon as possible; for a short time often determines the event of the case in a fatal manner. But if none can be obtained, the best you can do is to adjust the limb and draw the divided surfaces together; apply chloroform liniment and whiskey to allay pain and produce reäction; give an opiate; keep the patient quiet, etc.

If the patient is much prostrated, brandy may be freely given. When reäction is fairly set up, tepid effusions may be necessary for subduing inflammatory action in the injured part.

When the wound suppurates, it must have such dressings as circumstances require, taking care that at each application of them, the fracture is disturbed as little as possible.

DISLOCATIONS.

When the articular surfaces of bones are thrown out of their particular places, the accident is termed a *dislocation*, or *luxation*.

Dislocations are divided, like fractures, into two principal kinds, viz., *simple* and *compound:* simple, when there is no external wound communicating with the cavity of the dislocated joint; compound, when the injury is attended with a wound of this description. Luxations have also been distinguished into *ancient* and *recent; complete* and *incomplete*.

The diagnostic marks of dislocations chiefly consist of circumstances arising from the functions of the affected joint being interrupted, and the lodgment of the articular extremity of a bone in an unnatural position, and among parts which it compresses and renders painful. Hence, there

is a loss of motion in the joint; the limb or part is either shortened, lengthened, or distorted to one side, according to the kind of dislocation; the pressure of the dislocated head of the bone on the surrounding parts causes considerable pain, which is immensely increased when the limb is moved. The head of the dislocated bone may sometimes be distinctly felt, forming a preternatural tumor or projection, while in the situation of the articular cavity there is an unusual depression, or want of fulness in appearance.

Luxations are produced by external violence, which ruptures such ligaments as naturally restrain the dislocated heads of the bones from being thrown into the particular directions in which, in various cases, they are found situated. Even tendons, proceeding over the surface of the joints, are frequently lacerated.

The degree of danger in cases of luxations is very much altered by the circumstance of the case being a simple or a compound one. Simple dislocations, when recent, may commonly be reduced with facility, and they cannot be reckoned at all dangerous cases. Compound dislocations of large joints, on the other hand, are, like compound fractures, frequently attended with danger; and the same nicety of judgment is requisite in determining whether amputation ought to be immediately performed, or an effort made to preserve the limb, as in cases of compound fractures.

The indications in the treatment of dislocations are to reduce the displaced articular surface as speedily as possible, and to support the joint with bandages or splints, until the lacerated ligaments, tendons, etc., have had an opportunity of uniting.

In cases of compound dislocations, it is a most important point to obtain a prompt union of the wound, as the injury can afterwards only be regarded as one of a simple kind. The lips of the wound are therefore to be brought accurately together with sticking-plaster, and the joint kept perfectly quiet in splints.

In order to reduce dislocations without difficulty, it is necessary to consider what muscles have the power of opposing your attempt to bring the dislocated head of the bone

into its proper place, and these should be relaxed at the time when the extension is made.

Dislocations, when reduced, are in general not so troublesome to keep right as fractures, and are not so easily displaced by the actions of muscles.

Pouring a stream of warm water for a long time upon a dislocated joint, and on the muscles which resist its reduction, will cause such a complete insensibility of the parts, and so much relaxation, that the joint can generally be put in place with very little trouble, and with very trifling pain to the patient. I once continued to pour the water for three hours, and then put a shoulder-joint into place, without assistance, that had been out several days, and had resisted the force of several strong men.

As to the manner of reducing different dislocations, the operator must exercise his own common sense, which will be more likely to direct him right than any partial directions which could be given, or even a full treatise, which would hardly ever be read with the attention necessary to make it practical or available when the information would be needed.

OF POISONED WOUNDS.

The most common wounds of this description are the stings of gnats, wasps, bees, and hornets. The bites of mad animals and of poisonous reptiles are the most serious.

It is highly probable that the poison insinuated into wounds does not always derange the whole system, merely in consequence of absorption. The constitutional symptoms would seem sometimes to happen *per consensum*, before the local poison has had time to find its way into the circulation, as in the bite of the cobra de capello of the East Indies, and the American rattlesnake.

Hence, in the treatment of all severe poisoned wounds, two chief indications arise: 1, to prevent absorption of the poison and its alarming effects, either by quickly cleansing the wound from it, or by rendering its qualities inert; 2, to appease the sympathetic disorder of the constitution by medicines of the sedative and antispasmodic kind.

Various are the means that have been used to fulfil the first object. Scarifying and cupping the wound, suction, the actual cautery, setting fire to gunpowder placed in the part, different kinds of oil, powdered cantharides, and excision of the injured part, are the principal ones.

The second indication demands the internal exhibition of opium, the volatile alkali, camphor, musk, and similar remedies.

STINGS OF INSECTS.

Bees, wasps, hornets, and other insects of this country, produce, in consequence of their sting, a great deal of pain, redness, heat, and swelling in the part affected; but the injury never gives rise to any alarming symptoms. There is an extraordinary irritability in the skin of many persons, who invariably suffer more than the generality of mankind from the bites and stings of insects.

It is certain that the sting of an insect is not simply a fine puncture; for, if it were, there could be no cause for such great local uneasiness as it usually creates. The sting of the honey-bee is always left behind in the wound, and excites irritation.

Lemon juice, vinegar, Goulard's lotion, cold water, oil, and hartshorn, are the principal local applications recommended in these cases. But the juice of the red onion is preferable to any other application I have ever seen made, except the chloroform liniment. Both of these give almost instant relief, so that no redness or swelling follows, if applied soon.

BITE OF REPTILES.

The poison of snakes is lodged in a capsule, situated at the root of two fangs in the upper jaw, and is pressed out when the animal bites.

The bite is not invariably followed by the train of severe symptoms we are about to enumerate. This may depend on various circumstances; the animal, just before biting the patient, may have bitten something else, so as to have emptied the poison-bags completely. The bite may have

taken place through clothes, and great part of the poison may have lodged on them.

Though the poison may be lodged in the wound, there may be a tardiness of absorption, and the virus may therefore be washed off by suppuration, without having affected the constitution; or the means made use of may have removed it completely from the wound. The narrowness of the injury is, however, very unfavorable to any attempt of this kind.

The bad symptoms from the bite of the less poisonous snakes, as the viper and highland moccasin, or copper-head, usually commence in about twelve or fifteen hours. An acute pain and a burning heat are experienced in the part affected, which begins to swell. The tumefaction, tension, heat, and pain, gradually spread over the whole limb, and, in some cases, the whole body is said to be swollen. Dejection of spirits, smallness and weakness of the pulse, headache, nausea, and vomiting, ensue. A fixed pain is felt in the region of the heart, and all the surface of the body assumes a yellow tinge. The urine seems as if it were impregnated with bile. Cold perspirations and convulsions take place, and death sometimes finishes the tragedy.

The bite of these serpents seldom proves fatal in this country. It might, however, kill a child, though it does not generally destroy an adult; for it appears that the danger is in proportion to the smallness of the animal bitten. The bite of a rattlesnake is much more fatal in its effects than that of any other reptile in this country. It often kills so speedily that little time is allowed for the use of remedies.

Treatment.—The treatment is divided into the local and constitutional means. By the former we endeavor to prevent the ill effects of absorption; by the latter we strive to appease the derangement of the system, arising either from absorption of the poison, or *per consensum.*

Treatment applied to the wound.—Excision of the injured part, as soon as possible after the occurrence of the accident, is, beyond a doubt, the most efficacious and advisable

plan. All the other means designed to extract the poison completely from the wound, or to destroy its pernicious nature, as uncertain in their agency, ought always to yield the preference to excision of the part.

Oil, when applied, must act either by its insinuating itself between the poison and the wounded surface, or by becoming blended with the virus, and rendering it inert. Powder of cantharides produces a copious discharge of matter, by which the poison is probably washed out of the wound. The actual and potential cauteries must act in the same way as excision, by killing the part, and allowing the poison to be taken away when the slough separates. Perhaps, indeed, they may decompose the poison; but they are not deemed of such certain efficacy as the immediate removal of the wounded part by the knife. Yet they are certainly preferable to every means except excision.

Great care should be taken in excision to go deeper than the bite.

Constitutional treatment.—Two remedies are now principally relied on, viz.: spirits, and olive oil. We can comprehend how spirits, given to the extent of full intoxication, may act beneficially, by preöccupying the nervous sensibilities, or by destroying their sensibility for the time, so that no impression can be made by the virus. And it is possible that the alcohol may, by combining with the poison, so change its nature as to render it inert and harmless; and the latter mode is the only conceivable way in which olive oil can act beneficially. But that it is a valuable remedy, or antidote, for animal poisons cannot be doubted, as much recent evidence has accumulated of its efficacy, which cannot be controverted. As soon, therefore, as possible after a bite has been received from a poisonous reptile, let the part be cut out, or strong suction be made with the mouth, or by cupping instruments; then wash the part well with whiskey or water, and apply lint or carded cotton saturated with olive oil. From two to four ounces of the oil should also be taken internally; and, if symptoms of poisoning come on, as much good whiskey should be given as will make the patient *drunk*. Care, however, should be observed

in the use of this remedy, as children and females, or other persons not accustomed to the use of alcoholic stimulants, may be killed by an over-dose. It is best, therefore, to commence, in such cases, with a moderate dram, and repeat it at short intervals, until the full effect of intoxication is obtained.

Ammonia and oil of sassafras both possess great power over animal poisons, and have been principally relied on by the author for neutralizing them, or counteracting their effects. They are usually given in conjunction, as in the following formula: Aqua ammonia and oil of sassafras, each one drachm, or a teaspoonful; sweet oil, one ounce; to be shaken well and taken at once. The same may also be applied to the wound.

The oil of sassafras applied to the bites or stings of insects will in a very few minutes relieve the itching or other suffering occasioned by them.

SCALDS AND BURNS.

A moderate degree of caloric, or the matter of heat, is a healthy stimulant to the human system, is pleasant to the nerves, and excites the capillaries to vigorous action; but applied in excess, it impresses the nerves painfully, and excites over-action in the capillaries, so that the exhalants throw out the serum of the blood too rapidly for it to pass through the pores in the scarf-skin, which seem to be closed by the action of the caloric; and the consequence is, that an accumulation of water takes place under it, and violently separates it from the true skin, causing much suffering in the fine nervous expansion on its surface, and presenting the phenomena which we call blisters. Any other stimulant applied in sufficient force will produce this effect; as Spanish flies, spirits of hartshorn, slapping with flat instruments, etc. Now if nothing acrid or poisonous has entered, so as to continue the irritation, this profuse secretion soon relieves the morbid excitement, and the suffering is at an end; and if let alone, the absorbents will remove the effused fluid, by which time a new scarf-skin is formed, and the old layer peels off. If the collection of water be moderate,

it is best to leave its removal to the care of the absorbents, as it serves as the mildest dressing which can be made for protecting the exposed nerves; but if it be large, it is best to make minute punctures and let part of it escape, or the pressure will not only irritate the nerves, but, if the action be low, may cause destruction of the true skin.

Now as blisters from mere over-stimulation, as from ammonia and chloroform liniment, very soon cease to smart or give pain, while those from Spanish flies and excessive heat do for a considerable time, and often cause active inflammation to be set up in the true skin and subjacent cellular tissue, it is evident that in these cases something has entered the system which for a time prolongs the irritation. This is known to be the case in the action of Spanish flies; it is equally certain that it is also the case in blistering with excessive heat; the caloric becomes positively fixed in the tissues, and hence the common idea of a necessity for something to "draw out the fire" is founded in good philosophy. Cold will very quickly remove the *free caloric* and prevent any further injury, but it will not remove that which has become *fixed* or *latent* in the tissues; hence, though a very suitable remedy when applied quickly after the application of the heat, yet at a later period it becomes positively injurious; as by its depressing influence it prevents the vigorous vital action which is necessary for throwing off the offending cause. Hence, if the injury be severe, the tissues may die under its influence, producing gangrene and mortification, and extensive sloughing if the patient lives. And then, if the cold be continued, although it allays the suffering, yet when it is withdrawn there will often be the same amount of suffering to be gone through with as would have been had it never been applied.

I once saw this strikingly illustrated. A man fell with both arms into boiling brine; cold was immediately applied, and continued for a number of days by frequent changes of cold slippery-elm poultices; at length it was discovered that the flesh was turning black, and I was sent for. A sassafras poultice was substituted, on which spirits of ammonia was freely sprinkled; and as the general action

was low, there being a feeble pulse and cold surface, brandy and ammonia were freely given internally. In a few hours reäction took place, and the same burning sensation experienced in the arms as had been immediately after the accident; and this continued for a number of hours. Now this suffering was not the effect of inflammatory action, for none had taken place—the action being barely sufficient to restore a natural temperature and arrest the gangrene; then the sensation was peculiar, being that produced by the action of caloric and nothing else. This man recovered, but with a loss of much of the soft parts, which took some weeks for their reproduction.

The proper plan of procedure, therefore, is, when a burn or scald has been received, to immediately apply cold, and continue it until the suffering ceases; it has now done all that it can do beneficially—it has removed the free caloric, and prevented any further mischief from this source; and if the fire has not had time to penetrate and become fixed in the tissues, and has not been intense enough to act as a cautery and destroy the life of the part, nothing more will be necessary to be done, as there is in fact nothing more to do, as the disease has been *aborted*.

But if on removing the cold the burning sensation should return, it is folly, it is madness to continue it, as it will at best only give momentary ease at the expense of future suffering, and may occasion extensive loss of substance, or even a fatal collapse. I once saw the latter event brought about. A young lady's garments took fire and burnt her extensively, but not deeply; cold was applied, and continued. Six hours subsequently I saw her; she was not suffering, but her pulse was feeble and fluttering: internal and external stimulation were resorted to, but no reäction ensued, and she died comatose in a few hours after. Cold is best applied by immersing the part in cold spring or ice-water, or by covering it with cloths saturated with the water, and then pouring water on them from time to time. This should never, however, be continued longer than half an hour, when, if the burning sensation returns, stimulants should be applied—those possessing also anodyne pro-

perties are to be preferred, so that the nerves may be soothed while the capillaries are stimulated; the best I have tried is the chloroform liniment, combined with an equal portion of oil—castor oil is best; sweet oil, or flax-seed oil, or even melted lard, will answer. If the liniment is not at hand, use equal parts of spirits of turpentine, laudanum, and oil, or whiskey and camphor and oil. A soft cloth should be saturated with one of these and applied smoothly to the surface, and suffered to remain; keeping it moist by repeated applications to the outer surface. But if none of the above means are at hand, cover the surface with wheat or rye flour, and should it become saturated with the serum from broken blisters, peel it off, and make a fresh application. The flour should be applied liberally, so as to absorb the serum, and form a protection against the action of the atmosphere. If the burn or scald is of no great extent, an application of collodion will answer every purpose, being stimulant and anodyne, and at the same time forming an artificial covering. But if the injury be extensive, although ever so slight, internal means should also be used, and these should possess the indispensable properties of being anodyne and stimulant. The fever syrup is peculiarly appropriate; next to this, paregoric, or brandy and laudanum, will be best. If the heat has not destroyed the life of the true skin, the cuticle will be renewed in a very short time, and the patient cured; but should the skin be destroyed, as its reproduction is always a slow process, the recovery will be tedious. Suppuration is commonly profuse, and, if the surface be large, may exhaust the patient; it should therefore be moderated by an application of equal parts of beef's-foot oil and lime water. Mild dressings, such as simple cerate, or castor oil, should alone be used; except the process of healing should appear to flag, and the granulations look weak or of too dark a color; in this case the chloroform liniment, weakened with two or three times the quantity of whiskey, should be used until the granulations become firm and of a brighter red color. Should the burn be deep, the chloroform liniment will be found to be the best application for keeping down any unpleasant odor,

and for hastening a separation of the dead parts from the living. The parts should also be kept covered with a poultice made of equal parts of pulverized sassafras and slippery-elm barks.

The health of the patient should be kept as perfect as possible during the cure of bad cases, by attending to the condition of the bowels, diet, etc.; the diet should be light and nourishing.

EFFECTS OF COLD.

A frozen limb, in which there is no injury of any organic part, no other alteration but rigidity of the solids and congelation of the fluids, may be recovered by the *gradual* communication of caloric to it. Experience has evinced that the whole body may be in the same condition, having all its vital functions suspended, and yet be restored to animation. In this case, however, the gradual impartment of heat will not avail, unless the heart and large blood-vessels retain the power of action. But since animation, suspended in consequence of cold, has been restored after a considerable lapse of time, neither hope nor exertion should be abandoned.

When the whole body, or any part of it, is frozen, warmth should be communicated to it very gradually. If a limb that is not actually frozen, but excessively cold, be suddenly heated, very violent inflammation is the result. The part swells and becomes red and blue, with insupportable darting pains. When a part actually frozen is thus quickly warmed, the same symptoms arise, but in an aggravated degree, and they soon terminate in mortification.

In order to thaw a frozen limb, it is best to rub it with snow until sensibility and motion return. If the ear or tip of the nose should be the part concerned, care must be taken to avoid breaking it. If snow be not at hand, ice in water should be used instead of it. As soon as marks of sense and motion are discerned, the frictions are to be made with brandy, tincture of myrrh, camphorated spirit of wine, or other stimulants.

The next object is to endeavor to excite a perspiration by

giving warm teas or mulled wine, and putting the patient to bed in a chamber where there is a fire. In this situation he is to remain until he begins to perspire, which is generally succeeded by a perfect recovery of whatever sensibility may have been lost.

When a part is almost in the state of gangrene, in consequence of improper exposure to sudden heat, sometimes its recovery may still be accomplished by immersing it in water of a temperature nearly as low as the freezing point. The part must be kept immersed until the swelling, pain, and marks of discoloration begin to diminish, when frictions with brandy, etc., may commence, and the warmth be gradually increased.

This plan often succeeds when expectation, *a priori*, cannot be very strong. If mortification cannot be avoided, the future treatment does not differ from what has been explained in the chapter on that subject. In this case, however, opium is preëminently useful.

The treatment of the whole body, deprived of animation by cold, is similar to that of a part. It is to be covered with snow, or placed in ice-cold water, so that the mouth and nostrils are not obstructed, and care is to be taken not to break any part. In this way signs of vitality must be awaited. When these appear, strong volatiles and sternutatories are to be applied to the nostrils, and air is to be blown into the lungs.

When the body has been thawed, and signs of returning animation increase, it is to be taken out of the water, rubbed with brandy, and conveyed into a warmer situation. Any diaphoretic drink should then be administered, and as soon as the patient has been well dried, he is to be put to bed, and remain there till he begins to sweat.

CHILBLAINS.

A chilblain in the mild state is a moderately red tumor, occasioning heat and itching. The complaint after a time spontaneously disappears.

In a more severe state, the tumor is larger, redder, and sometimes of a dark blue color. The heat, itching, and

pain are so vehement that the patient cannot use the part affected.

In the third degree, small vesicles arise on the tumor. These burst, leaving excoriations, which soon change into sores. The ulcers secrete a thin matter, penetrate deeply, and are very slow in healing.

In the worst cases of chilblains, the inflammation ends in mortification, which is often preceded by the formation of bloody vesicles on the tumor.

Causes.—The sudden warming of a cold part, and the sudden cooling of a heated part, seem particularly conducive to chilblains; hence, parts most exposed to the vicissitudes of heat and cold are most subject to the complaint; as, for instance, the toes, fingers, nose, ears, and lips.

Treatment.—One of the best applications to chilblains of the first and second sort is ice-cold water. The part affected is to be immersed in it a few minutes two or three times a day, until the complaint quite disappears. This event usually happens in less than four days. After every application, the part is to be well dried, and covered with leather.

In some cases, tonics and astringents have had the best effect; such as diluted muriatic acid, tincture of myrrh, salt and vinegar, etc. If these fail, spirits of turpentine and balsam copaiva, equal parts, or chloroform liniment, may be tried.

As the enterprise peculiar to our people is prompting multitudes to penetrate our uninhabited northern latitudes, where they will inevitably be exposed to extremes of low temperature, we think it advisable to be somewhat explicit in our directions with regard to the best means of preventing the often fatal effects of a protracted exposure to a very low temperature. This is always greatly increased by fatigue. Much of the effect usually ascribed to the influence of cold is owing to the exhaustion of the vital forces caused by protracted exertion. Such, especially, is the sleepiness which is usually given as a sign of impending danger from freezing, and persons are warned not to indulge in it at the peril of their lives. And this is true, if no one be present to arouse the sufferer at the proper

time; but it is very certain that under such circumstances a few minutes rest and oblivion in sleep will enable the system to so far recuperate that the individual may be enabled to make further efforts toward reaching a place of safety that would have been impossible without it. Therefore, when a party have been unavoidably a long time exposed to cold, and at the same time having to undergo much muscular exertion, the proper way is to stop occasionally and let all indulge in sleep for from three to five minutes, except one who is detailed to arouse the others at the proper time. In this way all may be preserved under the most unfavorable circumstances, whereas, if they pushed on, one after another, perhaps, would have dropped by the way, until no one was left to tell the tale.

ASPHYXIA—SUSPENDED ANIMATION—APPARENT DEATH.

The above heading is intended to include all cases of sudden suspension of the phenomena of life, whether from drowning, hanging, sun-stroke, the inhalation of irrespirable gases—as foul air in wells, etc.—or from whatever other cause which is capable of suddenly suspending the breathing and the action of the heart without destroying the integrity of the system. Sudden frights and overpowering emotions sometimes do this as effectually as drowning or hanging, and should be treated in the same way. The vital principle, or whatever it is which distinguishes living from dead matter, always continues for some time after the usual phenomena of life have ceased to be manifest, in cases of sudden or violent death, and very frequently, if proper means be used before the vital principle becomes extinct, the *active phenomena of life*—namely, pulsation and respiration—may be again established, and *death* be robbed, for a time, of its prey. And perhaps in no other instance is it so important that the *people* should pos-

sess the necessary knowledge to act without waiting for the aid of medical skill, as in these cases, for a very few minutes delay may make the difference between life and death, and perhaps, too, of one whose life may be bound up in your own, or one on whose life you may lean for your own existence.

We will therefore make no apology for being somewhat minute and impressive in our directions for the management of such cases, and we will first consider a case of suspended animation from *drowning*. In this case, besides the suspended animation, we usually have the additional trouble of water in the lungs, and it will be impossible for breathing to take place until this is got rid of; therefore the first thing to be done after extracting the body from the water is to place it in a position in which the water will be discharged from the lungs by its own gravity; that is, place the body across a log, a barrel, or your knees, and let the face be downward and the most dependent part; at the same time gently roll it a little from side to side, and occasionally introduce your finger into the fauces, or upper part of the throat, and detach any mucous or other matter which may happen to obstruct the chink of the glottis, or narrow opening into the windpipe. After having thoroughly freed the lungs from water, if no efforts at breathing be discovered, lay the body on the ground or the floor, and gently turn it on its side, a little over on the face, then turn it on its back, and continue to do this about as fast as a person will breathe when at rest. Do n't hurry, as that will prevent success. This motion of the body will cause the air to enter and be expelled from the lungs much more certainly and naturally than can be done by any method of artificial respiration which has ever been devised. We are indebted to Marshal Hall for this *ready method*, and no other plan is now pursued by any body who has any claim to correct science. The reader must take for granted not our decision only, but that of every scientific writer upon the subject, as we can not undertake to give the philosophy upon the subject. Now, at the same time that this manipulation is going on, somebody should be industriously

engaged in rubbing the body, observing that every motion must be made toward the heart. In this way the blood in the veins may be forced onward toward the heart, and may cause it to act by the stimulus of distension. The heart is perhaps the last organ which loses its vitality, and by causing it to contract and send the blood into the lungs they may be stimulated to action more certainly than by any other means.

A very common error is to resort to heat, as the warm bath, hot bricks, etc. Now, these means would naturally suggest themselves as proper, and yet correct medical science has decided that they are most pernicious. We can not go into an extended explanation of the reason of this, but will refer the reader to the known fact that animals and reptiles which have the power of living either in air or water are all of them *cold-blooded*, and the colder the water is the longer they can remain submerged. Then, it is well known that cold is a powerful generator of vitality. If warmth is decided on it must be *positive;* that is, it must be so great as to cause a *sensation*, and this will become proper so soon as breathing and the heart's action are fairly established, especially applied to the extremities.

Death by a failure of respiration is occasioned by the same condition, whether from choking, drowning, a closure of the glottis by spasm, or by being plugged with a piece of meat, or by a false membrane, as in croup and diphtheria; that is, the blood loses its *life*, turns black, and stagnates in the capillaries. It is perfectly wonderful with what rapidity these changes take place, a few seconds only being necessary to change the whole mass of bright-red, sparkling, *living* arterial blood into a thick, dark, *dead* fluid, totally incapable of sustaining the phenomena of life for a moment. Most emphatically, we live but a moment at a time; none of us possess a fund of vitality more than sufficient to say farewell; another breath will bring unconsciousness if any thing but life-giving, atmospheric air be breathed. How urgently do these facts impress any rational mind with the importance of pure, fresh air! And is it to be wondered at, that hundreds shut into a crowded

church soon exhaust the vitality of the air to such a degree that the brain should feel the stupefying effect of venous blood, and the congregation become more sleepy than devotional?

But, although it is true to the letter that almost a single breath of any of what are called irrespirable gases will suspend the phenomena of life, yet the heart does continue to act, and circulates the blood to some extent, for a time after all consciousness and sensibility are lost; but the blood, though moved through the vessels, imparts no vitality to the system, but by preventing the blood from becoming stagnant it enables us to successfully use means for resuscitation, and they should always be perseveringly used as long as there can be the slightest hope of success. Cases have been reported in which, after half an hour's effort, the patient revived. The shock which the system has received will make it necessary to enjoin perfect rest and quietness for some time after resuscitation, and some light nourishment and mild stimulants should be given; and, if reactionary fever should follow, it should be abated by sponging the surface with tepid water, and cooling purgatives.

In cases of *coup de soliel*, or sun-stroke, after consciousness is restored an anodyne will be necessary, and if giddiness of the head, ringing in the ears, etc., should continue for more than a few hours, cold water should be often applied to the head, and two small blisters drawn behind the ears.

Suspended animation, and even death, may be caused by a very different condition of the circulation—namely, by fainting, or syncope. In this case consciousness is lost from a failure of the blood to reach the brain, and not from its being poisoned by carbon. In fainting the surface is deadly pale, whereas in coma, or loss of consciousness from the presence of black or venous blood in the arteries, the surface is always purple, often quite black. In cases of fainting the patient should immediately be placed in a horizontal position, and if possible the head should be lower than the body, so that the force of gravity may induce the

blood to flow into the brain, for it is the want of blood in that organ which has suspended the phenomena of life. Nothing will act quicker and with an equal certainty in fainting than, after turning the patient on his belly, to strip the back naked and flagellate smartly with a hand ful of small switches.

How long a person may remain under water and be resuscitated is very uncertain. Sometimes a few minutes destroys life, and yet there are well-authenticated cases in which the person has been submerged for half an hour, and afterward revived. Vigorous efforts should, therefore, always be made when there is the remotest probability of success. As soon as the patient has fairly revived he should be removed to some comfortable place and put to bed, and have some warm cordial drink given him, as hot whisky punch, hard cider with ginger, heated by immersing a hot iron in it, etc.

Other instances of *asphyxia*, or apparent death, whether from hanging, foul air, etc., must be managed precisely as from drowning, except that the means for getting clear of the water on the lungs are not necessary. The management of still-born infants will be considered in the chapter on midwifery.

MIDWIFERY.

Under the head of midwifery is commonly included a brief notice of the female reproductive organs; the diseases to which her sex renders her liable; the diseases growing out of pregnancy and childbirth, and those which may succeed as a consequence; midwifery proper, or the management during parturition or childbirth; and the management of the infant, and the treatment of its diseases.

We will conform to this custom, but cannot be expected to enter much into details or minutiæ, as that would swell this work to an inconvenient size. All we intend in regard to *practical midwifery* is to give some plain directions, which may serve to enable a sensible person to render proper assistance in the absence of an experienced midwife or scientific *accoucheur*. In the absence of a physician it is often an absolute necessity that those unacquainted with the details should superintend a delivery. Hence the necessity of including practical midwifery in this work.

As the history and treatment of diseases peculiar to females constitute the most important part of a work designed for family reference, they will receive full justice, even at the expense of rendering the work larger than was at first intended. But the reader will not object to this, if the pages are found to be filled with interesting and useful matter.

CHAPTER I.

A SKETCH OF THE ANATOMY OF THE FEMALE REPRODUCTIVE ORGANS.

THE pelvis is composed of five bones, viz.: the sacrum, or arch bone; the innomenati, or two side bones; and the coccyx, or crupper bone.

The os sacrum forms the posterior or hinder part of the pelvis, or basin, and is attached, above, to the last lumbar vertebra, or backbone, of which it is really only a continuation; below, it is attached to the os coccyx, and at each side to the os innomenati. Like the backbone, it is hollow, for the purpose of receiving the spinal marrow, and is perforated with many holes, both in front and behind, which give passage to the nerves that proceed from the spinal marrow, and are sent to the lower extremities, and to the organs contained within the pelvis. Now, as the nerves which issue from the holes, or foramen, on the front or inside of the sacrum are subject to be pressed upon by the contents of the pelvis, it is easy to account for the various pains and aches experienced in the lower part of the back, from the pressure of hardened fæces in the rectum or lower gut; from the womb in pregnancy, or when swollen and hard from disease; and from polypi or other tumors.

The coccyx is attached to the sacrum above, and is loose below, and serves to taper off the spinal column and afford some support to the contents of the pelvis.

The os innomenati form the sides of the pelvis, and are attached behind to the sacrum, and in front to each other. Each of these bones is composed, in infancy, of three sepa-

rate bones, which do not become firmly united until puberty, or when the individual has ceased to grow.

These pieces have received separate names, and are described as separate bones, under the designation of os pubes, or share bone, os ischium, or hip bone, and os ilium, or haunch bone. The ilii, or wings, form the upper part, or brim, of the pelvis; the ischii, the lower part, and have two prominences, known by many as the huckle-bones, on which we chiefly rest when sitting; and the os pubes forms the front of the pelvis; and all three of these bones unite in forming the *acetabulum*, or socket of the thigh-bone.

A minute description of the bones of the pelvis would be quite unprofitable in a work of this kind, as it could not be understood without the aid of the bones themselves to look at, and a teacher to point out the various parts. But this much was necessary in order that the reader might have some definite idea of the locality of parts when spoken of with reference to these bones. And as the soft parts connected with or contained in the female pelvis are necessarily referred to in treating of the diseases to which they are incident, some observations on their structure, form, locality, and the functions they perform, also become essential to an understanding of the nature and treatment of the diseases and misfortunes peculiar to the female organization, and especially of those growing out of the relations of wife and mother. These parts will therefore be described as delicately and as concisely as is consistent with our main object, of being understood.

THE EXTERNAL ORGANS.

The term *pudenda* refers to all those parts of the reproductive apparatus which are situated upon the outer part of the pelvis.

Mons, or mons veneris, (mountain of Venus,) is the elevation or fleshy prominence upon the os pubes, or share bone, or front bone. The mons becomes still more prominent than it would be from a mere projection of bones at this place, from a collection of adipose or fatty material below the skin at that point, together with the hair which

covers this part of the surface; which caused it to receive, in ancient times, the appellation of mons.

About an inch and a half of the most projecting part of the front bone is known as the symphysis of the pubes; only the upper part of the symphysis is covered by the lower part of the mons, the lower part being occupied with the commencement of the genital fissure, or vulva, and is covered with the mucous membrane, which lines all the internal organs that have an external opening.

The derm or skin which covers the mons passes down on either side of the symphysis, leaving the genital fissure bordered on the right and left by the labia majorum, or great lips of the pudenda.

These labia are covered with ordinary skin on their outer surfaces, but are lined on their inner sides with mucous membrane; and, passing downward and backward, they are at length lost, or disappear in the perineum, which is the dense structure forming the lower part of the partition between the rectum, or lower bowel, and the vagina, or uterine canal, and performs important offices in connection with pregnancy and child-bearing, and will often be referred to.

Like the human lip, the skin on the outer side of the labia majorum changes insensibly into the mucous membrane which lines the inside, so that there is no distinct line of demarcation.

Like the mons, these outer lips are covered with hair, and supplied with numerous sebaceous glands, which, as in other situations, secrete an oily material for preserving pliancy to the parts. They also have a store of adipose or fat cells, though not as numerous as the mons.

The areolar or cellular tissue, lying between the external and internal surfaces of the labia, is extremely loose and distensible, and yields very readily to any injecting force; hence these parts are subject to great distension from dropsical effusion during the latter months of pregnancy, which often seriously interferes with delivery, but are easily relieved by making several small punctures with the point of a sharp lancet on the inner side of the labia. These punctures cause no pain, nor are they attended with the least

danger; and, as they allow an easy exit for the water, and very soon remove the swelling, this simple measure should never be omitted when the swelling is considerable.

Bruises, or the pressure of the head of the child in labor, occasionally cause a rupture of some of the blood-vessels in the labia, and they speedily become greatly enlarged by a collection of blood. A puncture should be immediately made, as the blood, by being retained, may occasion a very troublesome abscess. If an abscess be threatened from this or any other cause in these parts, it should be promptly treated, and, if possible, prevented, as the extreme looseness of the textures renders ulcers here very troublesome, and difficult to cure.

The *nymphæ*, which are called labia minora, or little lips, or labia interna, or inner lips, are two folds of the inner mucous membrane, like two flaps or valves, which are joined together at their upper ends about an inch within the external fissure, and extend downward, embracing the clitoris on each side, and, passing backward, are lost in the common lining of the vagina. They are loose and vascular in their structure, and probably serve the important purpose of allowing a greater degree of distention at the time of delivery. What is called the *vestibule* is a depression immediately behind or below the point where the nymphæ meet and the orifice of the urethra. The operator, therefore, when it becomes necessary to introduce the catheter, by recollecting that the orifice of the urethra may be found directly behind the junction of the nymphæ, and that a little tubercle or eminence may be felt on the lower margin of the opening into the urethra, can have no difficulty in finding the exact point into which to insert the catheter without annoying the patient by fumbling, or having to call for a light. The correct manner of procedure in introducing the catheter is as follows. The lady should lie across the bed, with her hips near the side, and her knees drawn up, and feet placed against the bed-rail; the operator should introduce his left fore-finger into the lower or hinder part of the fissure, and bring it up until it touches the prominence under the front bone; then move the finger

forward until he feels that it has passed over the little knob at the urethral opening, and ascertains that the finger rests in the little depression or vestibule; then with the right hand the catheter may be directed between the finger and the surface on which it rests, and cannot fail to enter the canal of the urethra. But after a hard labor, these parts are so much changed that the most expert operator often finds great difficulty in ascertaining the exact point against which to press the instrument, and at this time it will be better, after making a few unsuccessful efforts, to have "light upon the subject," rather than occasion injury by blind efforts, or to let the patient suffer from an over-distended bladder.

Cohesion of the Labia.—In young children the lining membrane of these parts sometimes becomes inflamed, and, if care be not taken, they may unite and grow together; but the attachment is not usually strong, and can easily be broken up, and the parts separated, by pressing firmly with the finger; an oiled rag should be now placed between the surfaces to keep them apart until the mucous membrane has healed.

The Fourchette.—The labia majorum are partly lost in the perineum, and are partly fused or joined with each other, and where they unite there is a sort of seam, something like a scar from an incised wound, which by the French has been named fourchette. Inside of this fourchette is a depression or cavity that is concealed until the fourchette is pulled forward and depressed; this little pocket-like depression is called fossæ navicularis, or boat-shaped pit, behind which is the vaginal valve, or fold of membrane, known as the hymen, the mark or sign of chastity recognized by the law of Moses, but now admitted to be often wanting, even in early girlhood.

The hymen, we have said, is nothing more than a fold, or duplicature of the mucous membrane of the vagina; in some cases it is almost wholly wanting, but in others forms nearly a complete partition across the vaginal canal, terminating just behind the orifice of the urethra, and only having an opening sufficient to admit of the passage of the catamenia,

or menstrual discharge; and even this is occasionally wanting, which forms what is called imperforate hymen, and, if not remedied, will give rise to very serious consequences when the girl comes to menstruate. The remedy, of course, is to divide the membrane, but we will speak more of this in another place.

The Clitoris.—From the under sides of the ossa pubes, or share bones, there arises a spongy body, composed principally of blood-vessels, which proceed along the bones until they meet each other, and, uniting, form a projection, which is very noticeable in children. When these spongy bodies which form the clitoris happen to become pierced by falls on sharp bodies, the bleeding is sometimes dangerously profuse. I was once called to a lady who, in clambering over the foot of the bed, fell on the top of a little chair that happened to be in her way, and received a wound in this part which came near costing her life. Compresses dipped in alum water, and bound firmly to the wound by the T bandage, finally arrested the hemorrhage.

The Vagina.—Having given some account of the external reproductive organs, we will next notice the vagina, which, as it forms a canal leading from the vulva, or external orifice, to the uterus, or womb, is partly an external and partly an internal organ.

The vagina may be considered the excretory duct of the uterus, as along it passes the menstrual flux, mucous secretions, and all other discharges from the womb; and it is composed of such dilatable tissues, that although, in the virgin, it is less than an inch in diameter, yet it is capable of giving passage to a fully developed fœtus. The vagina is lined by a mucous membrane, which appears not to possess a high degree of sensibility, or life-force; hence it is liable to few diseases, and possesses but a feeble power over other organs through sympathy; in this it differs from almost all the other sexual organs.

The Womb.—The uterus is situated at the termination of the vagina; it is pear-shaped, placed with its smaller end down; it is from an inch and a half to three inches in length; and is divided into its fundes, or upper portion, its

body, or middle portion, and its cervix, or neck, which forms its lower portion and extends partly into the vagina. The direction of the vaginal canal is backward and upward, but the womb stands nearly perpendicular, so that at their junction they form a considerable angle, and hence the cervix, or neck of the womb, which extends into the vagina, appears to dip into it upon its upper side, and therefore, when making a vaginal examination, the end of the finger does not come in contact with the mouth of the womb, but it is felt projecting downward from above. Now this being the natural relation which subsists between the uterus and vagina, when any other obtains, it may be known that the womb is misplaced. We will again refer to this when we come to treat of uterine misplacements.

The walls of the uterus are about an inch thick, and are composed of its mucous lining, contractile fibres, nerves, blood-vessels, absorbents, and an outer serous covering, composed of an extension or reflection of the peritoneum from the bladder, rectum, etc.

The mean length of the womb being about two and a half inches, and as it projects near half an inch into the vagina, about two inches must therefore project above the vagina, and is held in its place by its peritoneal attachments to other organs and to the pelvis. A duplicature of the peritoneum passes off from each side of the uterus to the brim of the pelvis, and serves to steady it and prevent it from assuming an oblique direction to the right or left; two other folds pass forward and are attached to the bones near each groin, which prevent it from becoming tilted backward against the sacrum, and the bladder prevents it from falling forward. But these means often fail in relaxed conditions of the system, or when some unusual force is applied, in keeping the womb in place, all of which accidents will be noticed in their proper place.

The Ovaries.—On each side of the womb, but disconnected from it, lie enfolded in the peritoneum the germinal or egg-producing organ called ovary. They are granular-looking bodies, of about an inch in length, and not quite so broad, and somewhat flattened on each side. It is in these bodies

that impregnation takes place; or, at least, from these the ova or egg proceeds, which serves as the starting-point in the progress of the development of a new creature. The loss of these little organs absolutely disqualifies the female from becoming pregnant; it does more than that, it unsexes her. Farmers understand this, and by removing the *pride* from female swine, not only disqualify them from breeding, but destroy all sexual feeling; and the speyed sow and the barrow alike occupy a neutral position—neither partaking of the form or propensities peculiar to sex. But as the ovaries are outside of the womb, and have no direct communication with it, how, it may be asked, can the ovum or egg obtain admittance into the uterus? This is accomplished by a very singular contrivance: there projects from each side of the fundes of the womb a round body called the fallopian tube, which near the uterus is enfolded by the peritoneum, but its outer extremity is free, and hangs loose in the cavity of the peritoneum; this loose end is fimbriated, or fringed, much like the bloom of the wild apricot. Now this body contains a duct or canal which communicates with the cavity of the uterus; at its free extremity this canal is large enough to admit the end of one's little finger, but grows narrow as it approaches the womb, until at its entrance it will not more than admit an ordinary-sized pin.

Now, during the orgasm or excitement at the menstrual period, one or more of the little ova or eggs in the ovary becomes matured, and the absorbents cut a passage through the investing tissues for its escape; and, under a certain state of excitement, the fallopian tubes become engorged with blood, so as to put them on a strut, which brings their fringed ends precisely in contact with the ovaries, and these fringes embrace it like so many little fingers, and for the time hold the mouth of the tube in such nice contact with the ovary, that it serves as an excretory duct to this organ; or may transmit to them, through the medium of the womb, the vital impulse by which the ovum is impregnated, and become the *punctum saliens* of a new existence.

But whether the ovum is usually impregnated before en-

tering the fallopian tube, or during its passage along the tube, or after it has reached the uterus, are controverted points; but it is certain that this event does sometimes take place before the egg reaches the womb, as the fœtus is occasionally developed in the ovary, or in the common peritoneal cavity, or in the fallopian tube, and entirely outside of the womb, forming what is known as extra uterine pregnancy. It seems that after an ovum is once impregnated, it contains within itself the power of development; and when in contact with any moist living tissue, whether that be a mucous surface, as in the womb, or fallopian tube, or a serous membrane, as the peritoneum or cellular tissue, as in its bed in the ovary, it can attach itself and draw nourishment from the living tissue, forming for itself all the necessary appurtenances for complete development, as placenta, investing membranes, liquor amnii, etc.; a mystery which man will wonder over to the last of his inquisitive race, but will never comprehend.

Ordinarily, the egg passes along the fallopian tube until it reaches the womb, and makes an attachment at the fundes, near its entrance; but sometimes it falls down, and becomes attached to the neck of the womb, and its placenta becomes spread out over the os uteri, or mouth of the womb, and occasions great danger from flooding at the time of delivery, as the after-birth must necessarily become detached before the child can leave the uterus.

It would afford the author pleasure to pursue this interesting subject through all the marvellous workings of nature, by which a thing that "was not" becomes a living, acting, thinking, and immortal being; but space will not admit of such amplification, as we have already exceeded the limits contracted for, and have yet much to say upon important practical subjects—subjects involving the health and lives of our fair friends and of their precious little ones. We will therefore proceed to the consideration of some of the diseases to which the peculiar organization of the female renders her liable.

CHAPTER II.

FEMALE DISEASES.

MENSTRUATION.

At a certain age, the *girl* arrives at a period called *puberty*, at which time, if in health, she assumes the form and takes on the performance of the functions peculiar to *woman*. Among these is menstruation, which consists in a sanguineous or bloody secretion from the womb, occurring periodically, at intervals of about twenty-eight days. This discharge is known among the women by various appellations: as courses, menses, catamenia, monthly sickness, times, unwell, etc.

The time of the catamenial visitation, or of Menstruation.— The period of menstruation is an important one, and should be well understood by mothers, that they may be the better enabled to give the proper advice to their daughters in the development of this process. Mothers too often neglect this important point of health, and thus lasting if not incurable disease is brought upon the daughter.

Great difference exists as to the period at which females menstruate, not only in different countries, but in our own. The catamenia or menstruation generally appears at or about the age of fifteen years; but it appears much earlier in some, and is delayed much longer in others. These variations will be found to correspond with the proportionate developments of the body and the genital system.

All medical writers agree that the warmer the climate, the

earlier the catamenia will appear; and the colder the climate, the longer it will be deferred. It is said to make its appearance in the East Indies as early as at the eighth or tenth year; but in Greenland it does not appear before the twentieth or twenty-second year of age.

Its duration is pretty equal in all climates. The women in hot climates, who menstruate early in life, become old proportionably soon.

In a perfectly healthy female, the catamenial discharge is thrown off without pain or suffering; but in the present state of society this is not generally the case. Most commonly, for some days previous to its appearance, the girl has a pain in her head, with general languor and heaviness. She feels indisposed to use much exercise; has some pain in the back, loins, and down the thighs; and occasionally she experiences some uneasy sensations in the throat. There is a peculiar dark shade over the countenance, and especially under the eyes; the perspiration has a faint, sickly odor; the breasts enlarge a little, and are more or less painful; the digestion is apt to be somewhat impaired; the appetite is variable, and frequently not very good. After these symptoms have been present for a day or two, the catamenia appears, and the uneasiness diminishes. It occasionally happens that the first and sometimes the second period passes without any discharge, and the health is not impaired.

The period of this discharge is from three to six days, and from three to six ounces of fluid are discharged during that time. The catamenia, to be regular, ought to return every twenty-eight days in girls and unmarried ladies.

Some persons suppose that every discharge from the vagina that is tinged with blood is a menstrual discharge; but this is not true. Every discharge from the vagina that clots is not menstrual: all that portion that clots is hemorrhage, and that portion which does not clot is menstrual. Keeping this fact always in your mind, you may be ready, in a moment, to decide whether the discharge is a secretion or hemorrhage.

The menses are always secreted in the same manner as

the sweat is secreted from the skin, and they never come away in lumps, but always in a fluid state. The discharge is at times thicker and darker than it is at other times, owing to the retention of the fluid in the vagina after it is secreted and before it is discharged. Sometimes it appears in shreds and strings, when it has laid longer, and is still darker. The cause of the dark and stringy appearance of the catamenia is that the fluid part of the blood is absorbed before the discharge takes place.

Menstrual blood has a peculiar smell, differing from the odor of any other blood.

The menstrual function is of much importance to the female. By the healthy functions of the uterus it is prepared for the propagation of our species, and when the uterus does not perform its proper functions, barrenness is always the result.

The healthy action of the system, and general good health, and soundness of the constitution, depend much upon the healthy functions of the uterus. Females, then, and especially young girls, should be extremely careful of themselves during this process; and mothers should be particular with their daughters on this subject, and know that these things are all right with them.

Neither girls nor married women should change their clothing, so as to be liable to take cold, or produce a check, during this process. They should by no means put on any garment that is wet or damp during this time, and should be careful to keep their feet warm and dry.

Some girls are so imprudent that they will place their feet in cold water, or expose their feet and legs to the cool air, to check the menses, in order that they may be able to pay a visit, or attend a ball. This practice is but little better than suicide, often laying the foundation of disease, which terminates in death, after an incalculable amount of suffering. An imprudent check of the menses by cold often lays the foundation of incurable consumption.

Seeing, then, that much depends, in future life, upon the regular establishment of the menses, and a strict regard to their uninterrupted and healthy functions, too much care

cannot be taken on this subject. If, by accident or some unavoidable cause, the menses should be checked, they should be restored as soon as possible. For this purpose, place the feet and legs in warm water, and, at the same time, sit over a vessel of warm water, with or without some bitter herbs boiled in it, and remain there till you are in a free perspiration; then wrap up in bed, and take a teacupful of warm tea made of the root of vervine or pennyroyal. This draught may be repeated every half hour till the discharge returns. Cloths wrung out of hot mustard-water, or a poultice of mush sprinkled with mustard, should be applied to the abdomen, and renewed as often as it becomes cool. This is a powerful means of exciting the flow, and, with the other means recommended, rarely fails of entire success, if used early.

If this should fail, take the following pills: Gum myrrh, compound extract of colocynth, castile soap, each ten grains; make eight pills; take two every three hours. They may be worked off with warm gruel.

But should neither of these medicines be at hand, six or eight pills of the extract of white walnut, (butternut,) or a dose of castor oil, may be taken.

OF THE CONSEQUENCES ARISING FROM THE NEGLECT OF THE MENSTRUAL FUNCTIONS.

It is of the most vital importance that the functions of the system be established in a healthy manner, in order to the full and healthy development of the body and constitution, and there is no one function of the system that involves the general health more than that of the uterus. The order of nature is such that the functions of this organ must be performed in due time and in a healthy manner; otherwise, the general system will, sooner or later, suffer from this defect.

When the functions of the uterus should be developed, according to age and constitution, if they do not fulfil what nature demands of them, some other organ, of equal and perhaps of superior vital importance, will act vicariously or sympathetically, and strive to supply the place of the na-

tural and healthy functions of the organ that fails to do its duty. How often do we see the lungs taking on a sympathetic action to supply the functions of the uterus! But, by supplying this vicarious discharge, the lungs may suffer violence in their structure, and the result has often been pulmonary consumption. If the functions of the uterus are neglected, we may always look for the lungs to bear a fearful part in sympathy with that organ.

Should there be a scrofulous diathesis or taint in the system, and the functions of the uterus not be performed in a healthy manner, we may look for the speedy, and perhaps fatal, development of scrofula.

The stomach and liver also bear a heavy portion of the morbid train of action arising from the want of a healthy development of the functions of the uterus. Liver complaint, dyspepsia, and all the concomitant train of symptoms, follow. The lymphatic system is sure to suffer, and dropsy may be the result.

When we take all these things into consideration, how important is it that mothers should attend strictly to the healthy development of the menstrual functions! It is the duty of the mother to explain these things to her daughters, and have the first appearance of derangement attended to, before the foundation of more serious consequences is laid. A neglect of these things places too much at stake; and strict attention should therefore be given to this matter.

If the means used should therefore fail to bring on the courses at the time, measures should be taken to secure its occurrence at the next regular period. The most certain means for this purpose, according to my experience, is the compound syrup of butternut, or anodyne alterant, given under the head of dyspepsia. A teaspoonful of this should be taken after each meal, and continued until there are symptoms of the menstrual effort taking place, or until the period has arrived when it should take place; now give a tablespoonful at once, and aid it by all the means before recommended, as the foot-bath, steaming, hot cloths, etc.

But if these should all fail, or only succeed in procuring a scanty discharge, continue the alterant through another

month, and, a few days before the regular period, commence the use of the tincture of black hellebore; from five to ten drops should be taken, in a wineglassful of sweetened water, every three hours, and all the other means used as before directed. This course has never failed me, except in complications with some other formidable disease.

RETENTION OF THE MENSES—AMENSIA.

This disease is often confounded with suppression of the menses; but there is this difference: retention is where they have never appeared, though the proper time of life has arrived. A retention of the menses may be produced by various causes, such as a feeble state of the system, a defect in one or both of the ovaries, the uterus not being developed, etc. At other times the ovaries are entirely wanting, and then the catamenia never appear. The patient, in this case, is usually robust, and her voice rather on the masculine order, or deep and hollow. She has no breasts, or they are small.

Constitutional diseases, such as scrofula, consumption, diseases of the liver, etc., may prevent the appearance of the catamenia. The os uteri is sometimes closed; in this case, the regular menstrual feelings are present every month, but the fluid does not escape. In other cases the vagina is closed, having adhered together from inflammation produced by erysipelas, or injuries of some kind, such as falls, etc. The hymen is, at times, imperforate, and the escape of the fluid prevented.

Treatment.—The treatment of retention of the menses must necessarily vary, according to the nature of the disease, and the cause which produced it. The remedy to be used when the hymen is imperforate, is to divide it. This membrane is sometimes so strong as to retain the menses till they distend the womb, and the girl may present the appearance of being pregnant.

The same thing may occur by the adhesion of the walls of the vagina. When the mouth of the womb is closed, it must be divided by the use of a proper instrument; after which, a very small bougie should be introduced into the

womb; but great care is necessary in the performance of all these operations, and none but a skilful surgeon should attempt them.

After these obstructions are removed, the case must be treated as the constitutional symptoms demand. When the retention is produced from the want of a sufficient development of the constitution, those remedies that are calculated to develop and perfect the system must be used. A generous diet, such exercise as the patient can bear, and lively company, will best accomplish this end; but the patient must wait till nature is prepared to do her work. No forcing medicines should be used at this time; but the use of the anodyne alterant is peculiarly appropriate in this case, as it will improve the general health and tone of the system, and prepare it for the performance of this important function.

When the retention is produced by any constitutional disease, that must be removed by using the appropriate remedies.

When it is the result of a defect in the ovaries, the menses never can be brought on. When there is only a partial development of these organs, a partial secretion may be induced by bracing and strengthening the system, but it will always be imperfect. The patient will never bear children, and it is better for her not to marry.

SUPPRESSION OF THE MENSES—AMENORRHŒA.

When the catamenial discharge has once been established, and afterwards ceases to return, from any other causes than pregnancy or the change of life, it is said to be suppressed. This may arise from various causes; diseases in other organs, by monopolizing, as it were, the excitement, may prevent the determination of blood and nervous fluid to the sexual organs necessary for getting up the orgasm of the ovaries and uterus, which seem to be the immediate cause of the menstrual secretion. In these cases, the principal disease must claim our attention; but something can often be done at the menstrual period which may solicit the discharge, such as the warm hip-bath, mustard to the

thighs, drinking warm teas, etc. But the suppressions which most often claim our attention are the result of exposure to wet and cold, especially of the feet, about the time of the flow taking place. In spite of all the counsel that may be given by the physician, and backed by parental influence, girls will often persevere in being imprudent; as they feel well, they cannot realize the danger of these *little* exposures making them sick, and they will persist in putting their feet upon cold, damp ground, with nothing adequate to protect them from the pernicious influence of cold and dampness; and I suppose they will continue to do this after they have read this article, and would were I to write a volume upon the subject and they should read it. I will only add, therefore, that after such exposures, if the courses should be suspended, they should lose no time in the use of the proper means to bring them on. What has been said under the general head, and in retention of the menses, will apply here, and need not be repeated, as the hot mustard hip-bath, cloths wrung out of hot mustard water to the abdomen, the warm teas, etc., used at the time; and if the courses should not appear under their influence, then take a dose of calomel and work it off with castor oil; or, in place of the calomel, take a full dose of Cook's pills, which are better, and will work themselves off. The discharge from the liver and bowels will in some measure supply the lack of the courses, and prevent much injury from following; at the next period all the means recommended for bringing on the courses should be used as before; and if there be another failure, then give the purgative and commence the use of the anodyne alterant, and take it as directed in another part of this chapter, not forgetting to aid it at the last with the tincture of black hellebore.

PROFUSE MENSTRUATION.

If the discharge be a real hemorrhage from the womb, which may be known by its greater redness and by its coagulating or forming clots, it must be treated as such; (*see* HEMORRHAGE FROM THE WOMB;) only an excessive secretion of the true catamenia is intended to be ex-

pressed by the term profuse menstruation. This is almost always the effect of general weakness and relaxation, the general treatment of which may be found under the head of Chlorosis, and consists of all those means which tend to invigorate the health. During the period, perfect quietness should be observed; the feet must be kept warm by hot dry flannels, or some other means that will not produce steam; mustard may be applied to the arms, and half a grain of opium given twice or thrice a day; I say opium, for paregoric or Dover's powder, and even morphine, have a tendency to increase secretion. If these means should fail to keep the discharge moderate, cloths saturated with cold whiskey, in which alum has been dissolved, may be applied to the pubes and vulva; there is no danger of taking cold from this application and producing a suppression.

Profuse menstruation rarely observes the regular periods for its return, but comes on every twenty-two or three days, though some women have a return every two weeks—notwithstanding which, they become pregnant; but cases of this kind are rare.

The radical cure, we have said, is to be performed by using proper remedies during the intervals; and these remedies are, a generous diet, and moderate but regular exercise, either on foot or on horseback. The patient should take strengthening medicines, such as the chalybeates and vegetable bitters. The copperas pill is an excellent remedy, but pills made of the prussiate of iron and assafœtida have succeeded better in my hands than any other means; equal parts should be used, and a common-sized pill taken three times a day.

Where the menses are profuse, and the patient full of blood, with a rigid fibre of muscle, the treatment should be different, both in the attack and in the interim. During the attack she should be purged freely with epsom salts, and between the terms should live lightly, and keep the bowels cool by taking small portions of salts and cream of tartar.

PAINFUL MENSTRUATION.

This form of disease has many varieties, all of which we

shall treat of in regular order, and give the symptoms and treatment for each in its place.

The distinctive mark of this disease is the pain which is experienced before the discharge appears, and during its continuance. The discharge itself may be scanty, or of proper quantity. The amount of pain varies very much in different individuals, and in the same individuals at different times; it may be moderate, and last only a few hours at each menstrual period, or it may be so severe as to cause fainting, and, by repeated shocks, break down the constitution and entirely destroy the patient's health. The character of the pain and its accompanying symptoms vary according to the constitution of the subject; and on this ground the disease may be divided into three forms—the *nervous*, the *inflammatory*, and the *mechanical*.

Difficult menstruation may occur at any menstrual period, and it is rarely confined, after it has occurred, to one or two periods only. In some cases it may be traced back to the commencement of menstruation, and occasionally it continues through the whole of menstrual life.

First.—Nervous painful menstruation may attack females at any age, but the attacks are more frequent after the thirtieth year than before that period. It is to be found in unmarried women, and in married women who have not borne children, more frequently than in those who have. It is almost exclusively confined to those of a nervous temperament, and thin delicate habit.

The monthly paroxysms present all the peculiar characteristics of an irritable state of the nervous system. A day or two before the paroxysms come on, there is a sensation of general uneasiness, and a deep-seated feeling of cold; some patients say their bones feel icy cold. A pain in the head may precede or succeed the discharge, and sometimes the pain in the head and back alternate.

When the pain is in the back, it commences low down, extends round to the abdomen, and down the thighs.

In some cases but a few hours elapse after the pains commence until the menses appear; while in others it will be a day or two. These pains are generally attended with

a sense of bearing down, which adds much to the suffering of the patient. Finally, the menses appear, sometimes slowly, and sometimes in slight gushes. The quantity varies in different persons, and in the same person at different times.

The discharge is sometimes dark, and at other times paler than usual, or mixed with small clots. There is at times a peculiar membrane discharged, composed of plastic lymph, such as we see thrown up by children laboring under croup; it generally takes the shape of the inner surface of the uterus, but it is sometimes discharged in shreds.

When the figure of the uterine cavity is preserved, it may give rise to suspicions of pregnancy, and some ignorant persons have defamed the character of girls and widows on seeing this membrane. But such defamation arises from a want of knowledge, for the discharge of this membrane is no proof of a want of chastity. The expulsion of this deciduous membrane is attended with pains like those of labor.

Some patients discharge this bag at every menstrual period, while others only discharge it occasionally. Conception is very rare under these circumstances.

At the menstrual period, the mouth of the womb is more open than at any other time; is soft, and slightly swollen, with an increase of heat. The appearance of the menses is not, in this form of the disease, immediately followed with relief from pain, as it is in the next species to be described; but the pain subsides gradually, alternating with pain in other parts, as the teeth, face, etc. The pulse during the attack is rather lowered than increased in strength; the patient has no fever, and is not apparently weakened by the attack. Each attack may last from twenty-four hours to four or five days; after which time, the patient generally resumes her ordinary employments.

We have seen cases, however, in which the patient's health during the interval was much more seriously affected, being liable to returns of severe headache or pains in the back, so intense, and so much aggravated by walking, as to oblige her to lie on the sofa, or remain almost constantly in

bed; and, as the natural consequence of suffering and confinement, the functions of the stomach and bowels became impaired, and the general health seriously injured.

Causes.—The causes of painful menstruation are various: cold, sudden shocks, mental emotions, and any cause that will bring about an enfeebled condition of the system, may occasion the disease.

The only mistake likely to be made is the confounding of one of these attacks with abortion, or miscarriage, on account of the paroxysms of pain and bearing down, and especially when the membrane already described is discharged entire. But if the case is one of disordered menstruation, we shall find that the patient has been regular. The blood will not clot, and has the odor of menstrual blood; and if a membrane be discharged, it contains nothing but water; and of course no fœtus is detected.

Treatment.—The indications of cure are two-fold:

First, to mitigate the pain, and reduce the suffering during the attack; and,

Second, to prevent a return of the disease by appropriate remedies administered in the intervals.

Our principal reliance for the first is to be placed in sedatives. When the pain in the back first commences, give five grains of Dover's powder, and repeat it every two hours until relief is obtained. Chloroform liniment should be applied to the back and abdomen, and the patient should sit over scalded bitter herbs: double tansy is best; and when she lies down, the hot tansy should be rolled in a cloth and applied to the abdomen. I have seen almost immediate relief follow the use of this in very many cases. As soon as relief is obtained, give a dose of castor oil, with ten or fifteen drops of spirits of turpentine.

The second indication.—During the intervals, every means should be made use of to strengthen the patient and to lessen the general and local irritability. To this end, the diet should be generous and nourishing, and free exercise should be taken in the open air once or twice daily. If the patient is not able to walk, she should ride on horseback or in an open carriage. For more than twenty years I have depended

entirely upon the anodyne *alterant* as an internal remedy between the paroxysms of this disease; it should be taken in sufficient quantity to keep up a regular condition of the bowels; half a tablespoonful after each meal is usually sufficient. The patient should take the cold shower-bath, or sponge with cold water every morning between the terms; but should discontinue it a few days before the term, and use the warm hip-bath every night until the discharge comes on.

The second variety which we propose to notice is the *inflammatory, painful menstruation.*

This species differs materially from the one described, both in its symptoms and in its subjects. It occurs in females of a full habit, of the sanguine temperament, and at an earlier age, and chiefly affects unmarried females.

It generally comes on suddenly, and is caused by cold, or some violent constitutional disturbance. Young girls of a plethoric habit are liable to suffer slight symptoms of it at every catamenial visitation; but marriage cures this form of the disease.

In the milder form, there are but few precursory symptoms; but the more violent forms are preceded by restlessness and rigors, with some fever, and flushing of the face, and general headache. For some time before the appearance of the catamenia, the patient suffers with pain across the back, and an aching sensation in the limbs, weariness of the whole system, intolerance of light, etc. The face is flushed, the skin hot, the pulse full and strong, and upwards of one hundred beats in the minute.

In some cases, the fever rises so high that delirium comes on; but when the flow takes place, all these symptoms subside.

The time that elapses between the first appearance of the pain and the flow varies at different times and in different subjects; but less, perhaps, than in the preceding form of this disease.

The discharge in this form of the disease is more abundant, and is also occasionally accompanied with a membrane similar to that discharged in the first species.

During the intervals, the health of the patient is little affected. She sometimes has a slight pain in her head or side, and is often afflicted slightly with the whites between the periods, which is rarely the case in the former species.

The severe symptoms may occur with every menstrual discharge; but they are not so regular in their intensity as they are in the nervous form of this disease; and occasionally a period will pass with but little suffering.

If the neck of the uterus be examined during this time, it will be found more than usually full, with a considerable increase of heat in the parts; but no tenderness will be felt on external pressure above the pubes.

The breasts not unfrequently swell and become painful at this time, owing to the great sympathy between them and the uterus. A severe attack of this disease will disqualify the uterus for impregnation for some time afterwards; but slight attacks will not prevent conception; indeed, marriage is the best remedy.

Treatment.—Mix a tablespoonful of soda with three of epsom salts, and give a teaspoonful three times a day during the week preceding the term. When the pains commence, add twenty grains of Dover's powder to an ounce of spirits of nitre, and give a teaspoonful every three hours in a cup of catnip or balm tea.

The third or mechanical cause of *painful menstruation* or *dyspmenorrhœa* consists in a partial closure of the mouth of the womb, or of the vagina, caused by a thickening of its walls, or by the hymen being of unusual thickness, and such an imperfect aperture or opening as not to allow the menstrual secretion to pass off easily.

The first, or contraction of the mouth of the womb, must be remedied by an application of the ointment of belladonna, or Jamestown weed, which will dispose it to dilate and lessen its sensibility. After this has been used a few days, a bougie may be passed through the mouth, and suffered to remain a short time. If one made of slippery-elm be used, it may be left in this situation all night, and by its expansion will complete the cure by a few applications.

For an obstruction in the vagina, the same treatment is

equally proper; and the slippery-elm bougies may be increased in size until the vaginal canal is distended to a sufficient amount.

A partially imperforate hymen sometimes requires to be opened by making an incision through its substance. But even this may often be remedied by the above means.

As an illustration of my mode of management in such cases, I will transfer a very interesting case which I had the honor of reporting to the Tennessee State Medical Society, and which was published, by its order, in the June number of the Nashville "Journal of Medicine and Surgery," 1857.

CASE OF UNRUPTURED HYMEN AFTER TWELVE YEARS' ENJOYMENT OF CONNUBIAL PRIVILEGES.

Mrs. ——, about thirty-five years of age, of usually robust health, had been happily married over twelve years, but having failed to obtain *pledges of love*, consulted me as to the cause. Upon inquiry I ascertained that the catamenia had always been regular as to recurrence, but continued an unusual length of time, always becoming dark and fœtid toward the termination, and, contrary to what is observed in dyspmenorrhœa, there was no pain or constitutional disturbance at the commencement of the period, but these symptoms invariably supervened after a few days, becoming more intense toward the close, often extending through the second week, so that the period occupied near half the entire month.

As these symptoms were rather peculiar, I judged there was an abnormal condition of the reproductive organs, and suggested a vaginal examination. To this she objected; but, after several unsuccessful efforts to correct the condition of things, finally consented, when, to my surprise, I found the vagina terminated in a complete *cul de sac* about two and a half inches from the vulva. As the walls felt perfectly smooth and elastic, giving no evidence of cicatrization, and she had never suffered vaginitis, and especially as she averred that the parts had always been in this condition, I felt assured that it was a case of *Unruptured*

Hymen. As the catamenia had found a place of exit, I knew there must be an aperture, but for a long time was unable to detect it. The speculum showed a smooth, unbroken surface; the *tactus euriditus* failed to detect any prominence or indentation which might indicate the point of connection between the divisions of the vagina. But after fully failing to discover where it *probably* was, I turned my attention to where it *possibly* might be; and finally established its position about midway of the parietes of the vaginal sac, near an inch behind the *meatus urinarius*, just where I should at first have looked for it, but was misled by the hymen having been thrust upward until it apparently formed a part of the true vaginal walls. Into this opening I succeeded with some difficulty in introducing a small silver probe, which, having passed the barrier, played quite freely within, showing that there was plenty of vagina above.

This condition of things fully accounted for the symptoms attending the menstrual period; for as the discharge found an exit with difficulty, it collected in the posterior part of the vaginal cavity above the septum, and was there retained until partial decomposition took place, giving rise to the pain, fœtor, and nervous disturbance attending the latter part of the menstrual period. The first idea that suggested itself was to divide the septum; but as it had proved itself possessed of sufficient solidity to successfully resist the shocks incident to the *wars of Venus* for so long a period, I feared that its division might be attended with troublesome hemorrhage and constitutional disturbance. But feeling assured, by carefully watching the play of the probe, that the parietes were quite thin immediately below the aperture, I cautiously thrust a narrow bistoury by the side of the probe, turning the cutting edge from the bladder, making an aperture sufficient to permit the passage of a common-sized silver catheter. But although the cutting occasioned no pain, and was followed by inconsiderable hemorrhage, yet, as I was satisfied that the walls of the septum increased greatly in thickness immediately below the incision, I desisted for the present. A few days subse-

quently considerable cerebral disturbance came on, whether from the incision, or from some other cause, I cannot say, but it made me fearful of again resorting to the knife, and I laid the case before my friend, Professor Bowling, who suggested that a trial be made to dilate the aperture by the use of slippery-elm bougies. As the plan appeared to be feasible, I immediately put it into practice, and with the most happy and entire success.

Commencing with one of the size of a crow-quill, I daily replaced it with one slightly larger, until in a few weeks one of an inch and a quarter in diameter could be introduced with facility. Believing that this was sufficient for all present practical purposes, I concluded to trust to *natural processes* for further development, which proved to be quite adequate to the task. Although the menstrual function has since been performed with great facility, and without pain or nervous disturbance, and the uterus clear of disease, yet the main object of the operation has not yet been obtained, viz., fecundation. This may be owing to the fact that the *os tincæ* had found a resting-place in the posterior portion of the sac, above the septum, and still remains embedded in such a way, that it does not correspond to the plane of the vagina, which *error of position* may probably yet be remedied. But though the maternal desire has not been gratified, the shortening of the catamenial period, and the freedom from suffering which has been secured, amply compensate for the trifling inconvenience which attended the cure.

WHITES—LEUCORRHŒA.

Much space has been occupied by authors in descriptions of this disease, and quite a difference of opinion prevails as to its nature, and from what portion of the uterus or vagina the discharge originates. I suppose the mucous membrane which lines the vagina and uterus is subject to the same laws of irritation as when found in other situations; one of which is, that when excited to a certain degree, an increased secretion of natural mucus is thrown off; when more highly excited, this secretion becomes mixed with

plastic lymph, which gives it a denser consistence or greater tenacity. We find the first in connection with the mucous membrane of the bowels in mucous diarrhœa, and the second in dysentery. Then again, when the general system is debilitated and relaxed, and the mucous membrane in particular, a thin watery discharge is the consequence; as in diarrhœa, in the last stage of consumption, low fevers, and of many other diseases which end in debility. It is, therefore, to be expected that the same circumstances would act in a like manner upon the mucous membrane of the vagina and womb, and I deny that there are any causes for this disease but such as act upon the general principles which govern irritation and relaxation in other mucous membranes. This idea simplifies the subject exceedingly, for we have only to recollect the causes which produce the various kinds of deranged secretions in other parts having a mucous lining, to understand what will occasion a like effect upon that belonging to the genital organs. The only reason for referring these discharges to the womb, rather than to the vagina, is, as we stated when treating of these organs, that the life force or general vital sensibility of the lining of the vagina is not near so great as that of the uterus; and the latter is consequently much easier impressed by disturbing causes, and occasions, when irritation is set up, much wider and graver sympathetic disturbance in other parts.

The causes of leucorrhœa, therefore, naturally divide themselves into such as act directly in getting up morbid excitement in the genital organs, or indirectly through vital connection or sympathy with other organs; and such as produce debility and relaxation, either directly or indirectly. Of the first class, we may name cold; excitement from late hours at dancing and other parties; improper indulgence in food or drink, or in venery, etc.; and a very frequent cause is a descent or prolapsus of the womb, which, in consequence of its pressure into the vagina, and being chafed by every motion of the body while lying upon the perineum, causes an irritation throughout its whole structure, which extends to its mucous lining; and, as this descent of the

womb is itself usually a consequence of congestion, brought about by the action of the above causes, it is to be expected that we should usually find prolapsus and leucorrhœa coëxisting: in fact, they are very rarely found separate.

The second class of causes—those which produce debility and relaxation—are as numerous as the diseases and indulgences which depress the system and exhaust its vital energies; and it is unnecessary to particularize.

Treatment.—The views set forth above as to the nature and causes of leucorrhœa divest the treatment of all mystery. If it be a case of excitement, which may be known by the heat and other febrile symptoms which attend it, and by the discharge being rather thick and adhesive, and not very profuse, or if thin, acrid and scalding, the proper course of treatment at once suggests itself, which is, cooling purgatives, tepid astringent hip-baths and injections, a simple cooling diet, regular hours, quietness, etc. There is, however, one very efficient remedy, which would not so readily present itself, and that is balsam copaiva. This medicine, unfortunately, has in many localities obtained a bad name, in consequence of being so often associated by the physicians' prescriptions with an impure and odious disease. But this frequent association occurs in consequence of the great power which the balsam possesses over irritation and inflammation of the mucous membranes in general, and not because of any specific action in gonorrhœal inflammation. When practicing in regions where this vile disease was unknown, balsam copaiva constituted my surest reliance in irritations of the mucous membrane, whether that be in the mouth, constituting aphtha or thrush; the throat, in the form of bronchitis; in the lungs, in deep-seated colds and coughs; in the bowels, producing chronic diarrhœa; the kidneys and bladder, in painful micturition; or in the vagina and uterus, in leucorrhœa or whites.

The best form of administering the balsam is the following: Balsam copaiva, half an ounce; sweet spirits of nitre, two ounces; spirits of lavender compound, half an ounce; and simple syrup, three ounces. Mix, and give a teaspoonful from three to five times a day.

For the second variety, the treatment will consist in removing the disease or state of the system which has brought about this local weakness. The indication, therefore, is to restore general health and vigor, and this affliction will then disappear. But, as in debilitating and wasting discharges from the bowels, skin, or kidneys, this drain from the system is often sufficient to counteract all our well-meant efforts at a restoration of the general health, and must be checked before we can succeed. It becomes necessary, therefore, to do something for the disease itself. And as general weakness is almost always accompanied with increased nervous sensibility, it becomes necessary to combine with other means something that will allay nervous irritation, which, indeed, in these cases often constitute the most prominent symptoms. In combining remedies, it will be best, therefore, to unite those possessing tonic, astringent, and anodyne properties. The following pill will generally be found as good as any: Assafœtida, gum myrrh, and burnt copperas, each forty grains; make twenty-five pills, and give one three times a day. Injections containing the same general properties should also be daily made into the vagina. The following is as good as any: Yellow puccoon and nut-galls, each one ounce; sulphate of zinc, half an ounce; opium, one drachm; infuse in two quarts of hot water, and decant and bottle. A gill of this should be injected two or three times a day.

PROLAPSUS UTERI, OR FALLING OF THE WOMB.

By prolapsus is understood a descent of the womb below the position in the pelvis which it naturally occupies. When this descent only brings the uterus sufficiently low as to allow the cervix, or neck, to rest upon the perineum, or against the vulva, it is said to be incomplete; when it descends through the vulva, and becomes external, it is called complete prolapsus. The uterus now hangs down at the *labia*, between which and this body there is no interspace into which the finger or probe can be introduced. This cannot happen without the bladder and rectum being considerably deranged in regard to position. The first is always drawn backward, so as to take the natural situation of the

uterus, and assume, as well as the *meatus urinarius*, a horizontal position. Hence, we see in what direction a catheter should generally be introduced in these cases.

As the return of blood from the prolapsed uterus is usually more or less obstructed, the part frequently becomes very much swollen, and even copious discharges of blood occur. The naturally delicate texture of the lining of the vagina undergoes such an alteration that it seems more like the structure of the common integuments.

The friction of the clothes on the swelling, however, mostly occasions very painful ulceration on the outside of the vagina, if the prolapsus should be recent. But when the parts have been long down, they adapt themselves to their new situation, and hence we see an old neglected prolapsus attended with no particular occurrences, except the descent of the tumor when the patient is erect, and its return when she is in a recumbent posture.

Polypus is the only disease with which the *prolapsus uteri* can be confounded; and the mode of discrimination must be learned by referring to the chapter on that subject.

The causes of the *prolapsus uteri* are such as either relax the parts retaining the uterus in its natural position, or such as force this organ downward. Women who have had many children are particularly subject to the complaint. The prolapsus is also very liable to occur soon after delivery, when all the parts of generation are dilated and relaxed.

There are two indications in the treatment, viz.: to reduce the uterus into its natural position, and to prevent its descending again. The first object is in general very easy of accomplishment, when the prolapsus is incomplete. The second is effected by making the patient wear a pessary in the vagina, and use astringent injections. Incomparably, the most suitable pessary is one made of the bark of the slippery-elm, of which we will speak more at large hereafter.

The reduction of a complete prolapsus of long standing is sometimes difficult. The operation should be done before the patient gets out of bed in the morning. It is sometimes of use to empty the large intestines by a clyster before attempting reduction. However, the thickening of the pro-

lapsed viscus, and the alteration made in the position of the surrounding parts, in some instances render the design quite impracticable. In this circumstance, we must be content with drawing off the urine with a catheter if requisite, and supporting the part with a bandage.

The presence of ulcerations is no reason for not attempting to reduce the displaced part. When the tumor is very much inflamed and swollen, it is sometimes advisable to defer the attempt to replace the uterus until bleeding, the application of cold washes, etc., have diminished its size.

In recent cases of *prolapsus uteri*, we may hope to effect a radical cure by bringing the relaxed and dilated parts into another state. This may be accomplished by introducing into the vagina, immediately after the uterus has been reduced, a slippery-elm pessary; and for a time the T bandage is also to be worn, and the patient should remain for a day or two in a horizontal posture, and carefully avoid all strong efforts in going to stool, making water, etc.

INVERSION OF THE UTERUS.

Sometimes the uterus descends through its own mouth into the vagina, and occasionally quite out of the vulva. The first is the *incomplete*, the second the *complete inversio uteri*. In the latter, the vagina is also drawn down and inverted, so that the whole tumor situated before the parts of generation seems to hang by a pedicle, formed of the inverted vagina. Between this pedicle and the labia there is no interspace into which a probe can be passed. The outer surface of the tumor is, in fact, the inner lining of the uterus.

As the *fundus uteri* evidently cannot descend through the *os uteri* unless this aperture be very much dilated, it is obvious that the *inversio uteri* can rarely occur except immediately after delivery. An unskilful employment of force in extracting the placenta is a very common occasion of the accident. Polypi growing from the *fundus uteri* are, however, particular cases, in which the inversion of this organ may occur from its being dragged downward by the weight of these tumors.

Great pain, inflammation, tumefaction, and hemorrhage, usually follow the *inversio uteri.* Even mortification, convulsions, and death may take place, in consequence of the complete stage of the disorder, particularly when it has occurred in a very sudden manner.

The reduction of the inverted uterus ought not to be delayed a moment. The longer the operation is deferred, the more difficult it becomes; for, in general, pain, inflammation, and swelling come on with great rapidity. When inflammation has already occurred, leeches and fomentations should be applied to the tumor, and the reduction be afterwards attempted.

In very old cases, in which the *fundus uteri* has suffered long compressions in the vagina, the viscus becomes altered in its structure and figure so much that the inversion is totally incurable. The further descent of the viscus can only be prevented by the employment of a pessary.

ANTROVERSION AND RETROVERSION.

The uterus may either be turned forward or backward; the last is the most common, and is named *retroversio.* In the first case the fundus uteri becomes situated towards the *os pubes,* over the fundus of the bladder; while the *os uteri* is inclined towards the sacrum and middle part of the rectum, and is often situated so high up that it can hardly be reached by the finger.

The patient generally experiences a constant inclination to make water; feels pain whenever pressure is made above the os pubis; and, on standing up, perceives a hard body fall on the bladder, compelling her to empty this receptacle; but the tumor regularly falls backward again when she lies on her back.

This case is usually easily relieved. The practitioner should place the patient on her back, and make pressure with his hand just over the os pubis. At the same time a finger introduced to the upper part of the vagina is to press it forward, so as to urge the os uteri forward, while the pressure of the other hand is tending to push backward the *fundus.* The recurrence of the accident is to be prevented

by keeping the patient on her back, and applying a compress and bandage to the abdomen just above the pubes. In rare cases, the fundes of the womb becomes wedged, as it were, between the bladder and the vagina, and is extremely difficult to dislodge; a physician of much skill will be required in this case.

In the true *retroversio*, the *os uteri* is inclined towards the pubes, while its fundus is approximated to the sacrum, and descends so far between the rectum and vagina that it occasions a tumor at the posterior side of the latter tube. The viscus, thus situated, may render the passage of the fæces exceedingly difficult, and even impossible. As the preternatural position of the uterus necessarily displaces the bladder and urethra, retention of urine always attends the case; and this is the more troublesome, as the catheter, in such circumstances, cannot be very easily introduced. The orifice of the urethra is so drawn upward that it is sometimes situated higher than the arch of the pubes. When the bladder is very much distended, it prevents the *os uteri* from being felt with the finger. The *retroversio uteri* commonly happens during the second, third, or fourth month of pregnancy. In the latter months the uterus is too bulky to become situated between the vagina and rectum.

The retroverted uterus should always be replaced, as soon as possible, in its natural situation. The longer the case has lasted, the more difficult it is to rectify it, and the more the danger of the occurrence increases. The greatest urgency arises from the retention of urine and impediment to the passage of the fæces. The distention of the bladder and rectum must naturally render the reduction of the uterus more difficult. Sometimes abortion takes place, and this event has occasionally been known to be productive of relief.

As the return of the uterus to its natural position is always greatly facilitated by drawing off the urine with a catheter, this operation should be first performed. The uterus has often been known to resume its proper situation on the bladder being emptied. So much difficulty has sometimes been experienced in introducing a catheter in

these cases, that some practitioners have been obliged to puncture the bladder. However, few who know the way in which the urethra is displaced by a *retroversio uteri* would find such a proceeding necessary. The rectum should also be emptied, if possible, by clysters.

Reduction is accomplished by making pressure on the *fundus uteri*, with two fingers introduced into the rectum. The chief impediment to success arises from the projection of the sacrum. Hence the pressure should be so directed as to avoid forcing the uterus against this part. The operation should be accomplished while the patient is kneeling and leaning on her elbows, for in this position the uterus becomes more distant from the sacrum. The *fundus uteri* should be pushed upward and forward, toward the navel. Sometimes it is preferable to make pressure with the fingers in the vagina.

As I have never had an opportunity of using the slippery-elm pessary for this disease, no case having occurred in my practice since I invented the instrument, I cannot speak from experience, but I should confidently expect that a large one introduced as far back into the vagina as possible, and in contact with the fundus of the womb, would by its gradual expansion, which might be hastened by frequent tepid injections, gradually push the fundus up, and bring the organ into a right position.

IRRITATION AND ULCERATION OF THE WOMB.

Of late years, since the use of the speculum became common, ulceration of the womb has become a rather fashionable disease. That there does occasionally occur a case of real ulceration of the tissues about the neck, and even within the womb, I readily admit, as in a practice of upwards of thirty years I have met in my own experience *three* such cases; but the disease now so common, and which has been dignified by late authors with the term ulceration of the womb, does not merit that grave appellation, as it consists in nothing more than a slight blistering or abrasion of the delicate epithelium, which answers to the mucous membrane what the scarf-skin does to the

external surface. Now every wormy child will give examples of the same form of disease in the form of blisters and excoriations about the mouth, nose, and anus. In fact, it is a law appertaining to the mucous membrane that an irritation, existing at any point of its surface, will manifest itself by this kind of outcropping at its external opening—a wise provision by which we can read or understand, by the part seen, the situation of parts out of sight. Now when the mucous lining of the womb has become the subject of irritation, this same outcropping may always be found upon the lips of the mouth of the uterus; but it no more constitutes the disease than the excoriations of the anus do that of the worm case in the child. What has served to deceive both the physician and the patient with reference to this subject, is that *cauterizing* these blisters or abrasions almost uniformly gives temporary relief. This occurs from two causes: it at once allays the burning or aching sensation which is due to the local manifestation, and the strong impression made upon this part of the womb (and also on the patient's mind) serves for a time to break up the morbid chain of nervous influence, which often has much to do in getting up and continuing the disease. But notwithstanding the ulcers, as they are called, disappear after being touched with nitrate of silver, and the patient's sufferings for a time are suspended, and her hopes wonderfully elated, and the operator looked upon as a wonderful man of science, an especial saviour, yet, alas, the blisters come again, again are cauterized, and this is repeated until the patient's confidence is gradually frittered away until she finally sinks into hopeless despondency, or seeks relief from quacks and nostrums, regarding medical science as a humbug, and bringing discredit upon a noble profession.

True medical science will look upon these ulcers as a mere symptom of irritation of the mucous lining of the womb, or, perhaps, of the entire substance of the organ. And science further teaches that the womb, in consequence of congestion occasioned by this irritation, often becomes too heavy to be adequately supported by the relaxed uterine

attachments, and a falling or descent takes place, which further aggravates the case by the unnatural position, and the rubbing of the cervix uteri against the rough folds of the vagina, and the unyielding perineum.

This disease should therefore be treated upon general principles: whatever disturbing causes have served to get up and continue the irritation should be removed or avoided—such as irregular living, costiveness, irregular and excessive exercise, as dancing, excessive venery, etc. At the same time, all those measures which have a tendency to equalize excitement and improve the general health should be attended to, as the observance of prudence and regularity in eating, sleeping, exercise, etc.; to which should be added the cold bath or ablutions, cheerful company, or light and useful employments which admit of moderate exercise, horse exercise, etc. For more specific directions as to diet, regimen, and medicine, see Dyspepsia, Scrofula, and Chlorosis.

Much advantage may also be obtained from local measures; and when used with the idea of a palliative, and an assistant to the general treatment, the application of nitrate of silver to the abrasions about the cervix uteri becomes eminently a sensible and useful remedy. Astringent washes or injections, such as were recommended in leucorrhœa, or whites, are also of great advantage.

But since I adopted the use of the *slippery-elm pessary* I have had no occasion for the employment of any other means, either for reducing the irritation, which gives rise to the blistering, or for removing the congestion and general feverish condition of the womb, which always attends the disease, and occasions its increased size and density, which, by making it heavier, becomes the chief cause of its descent; which, as we have said, in its turn becomes a cause of further irritation—is, in fact, the principal cause, when this affliction occurs in the early months of pregnancy. And the elm pessary, as we have already said, is also by far the best means ever yet devised for removing the prolapsus. The profession had long felt the want of just such an instrument. Chomal, a celebrated French author, ex-

presses his regret that some means could not be devised which, while supporting the womb, would also act medicinally in soothing its irritability. All other pessaries or appliances for holding up the womb, so far from doing this, have almost uniformly been found to become themselves sources of irritation; and hence, many authors wholly repudiate their use. But this, while it gives mechanical support, also acts upon the swollen, irritable, and perhaps ulcerated womb just as a slippery-elm poultice does upon a like condition of the tissues externally. A great majority of the cases of irritation and prolapsus of the womb, connected with pregnancy, as well as many others, may be relieved by this instrument, without the aid of any other measures. Perhaps I cannot do better than transfer some extracts from a paper which I prepared upon the subject of medicinal preparations made of the bark of the slippery-elm, at the request of the State Medical Society, and read before that body at its last session. The other subjects contained in that paper will be referred to in their proper place, and the method of preparing the pessary, and other preparations, will be found under the head of Slippery-Elm, in the Materia Medica, at the latter part of this work.

It is hardly necessary for me to offer any explanation of the *modus operandi* of the above medicated pessary in the cure of many female afflictions, or to give evidence of its usefulness, as both will be perceived in a moment by every one at all acquainted with the materials used, and the maladies in which the pessary is indicated. But this pessary is of advantage in a variety of cases in which other pessaries would not only do no good, but produce positive injury. I have concluded, therefore, to give a hasty sketch of the various ills for which I have used it with advantage:

Case 1.—Soon after having made the first slippery-elm pessary, I was called to see a lady who was suffering from retention of urine, an affliction from which she had suffered much during the early months of two former pregnancies—her physician having to visit her daily for weeks, and use the catheter; but as he could not be found on the present

occasion, I was called in. Now it occurred to me that my pessary was the very article indicated in this case; and, after giving present relief by the catheter, I introduced one, and informed her that it would probably relieve her from any further annoyance, which proved to be so.

Case 2.—Soon after this I was called to see a colored woman at Mr. Wm. Boyd's who had fallen down stairs, she being in the seventh month of pregnancy. Manifest symptoms of miscarriage soon occurred, attended with great soreness and tenderness of the abdomen. I ordered a poultice to the belly, and introduced a medicated pessary; in a few hours the urgent symptoms all subsided, and she was up the next day. But about a week subsequently, I was hastily sent for, and she informed me that she had miscarried, but that it was no child—she passed it too, she said, without pain; upon examination, I found it to consist of the pessary I had introduced, greatly enlarged; she had not been aware that I had introduced it at all. She afterward brought forth a fine child at the full time, and did well.

Case 3.—A short time after this I was called to attend a woman who had just made a long and tiresome journey on the cars without stopping; her courses being on her, and the nights cold, suppression was the consequence, attended with great pain, acute tenderness, and considerable tumefaction of the whole abdomen, and high symptomatic fever. I gave her a purgative of castor oil and turpentine, ordered fomentations to the belly, and introduced a medicated pessary. General relief followed very speedily.

Case 4.—A lady who had suffered much for a number of years with neuralgic affections and bronchitis, and who had had several premature deliveries, in consequence of the uncontrollable cough and nervous pains, always increased by reflex uterine sympathies; was now in her eighth month, and imminently threatened with miscarriage from the above causes. As she had been under the direction of several skilful physicians, who had exhausted all the usual remedies, I resolved to try the power of the soothing and anodyne properties of the medicated pessary, supposing that,

as the lungs were pathologically sympathizing with the womb, I could make them do so curatively. It acted beyond my expectations, giving complete relief.

Case 5.—Kitty, cook at Captain Walton's. Had dysmenorrhœa; had been married for a number of years, but remained barren; her health continuing to decline until she was incapable of attending to business; had *fits* at each menstrual period. Found the womb as large as in the third month of pregnancy, feeling as hard as a ball of wood, and very heavy; great tenderness of the cervix, which was of a deep mahogany color, with some epithelian abrasions, profuse flocculent discharge, etc.

Introduced the medicated pessary, and put her upon sarsaparilla and iodide of potassium; introduced a fresh pessary every week, until three had been used. The uterus had now become soft and of natural size, tenderness all gone, general health much improved; had remained pretty clear of suffering, and has had no *fits* for over six months; attends to business as other negroes; had one spell of suffering since, which was soon relieved by the use of the pessary. In this case there was not much prolapsus.

Case 6.—A seamstress at J. B. White's. Had suffered with ulceration and prolapsus of the womb many years; had been frequently treated by different physicians, with only temporary benefit. She came under my care about eight months since. I examined with the speculum, and found the womb very low—much enlarged, and considerable abrasions; she was generally dropsical; feet and legs much swollen. I used the pessary, and put her upon sarsaparilla and potassium, as in the fourth case. Her general health improved rapidly, and there has not been much complaint of the womb disease since, except on one occasion, when she had very imprudently exposed herself, and was suffering great pain in the back and abdomen, simulating labor-pains: the pessary gave her prompt relief.

Case 7.—Clara, a servant of William O. Harris, of this city. Had sent her to the State Hospital for treatment nearly three years ago, where she remained about two years; during this time, I examined her several times, at the re-

quest of the superintendent, Dr. Wharton; her womb was very low, and greatly enlarged, quite hard, and adherent to the vaginal walls; cervix nodulated, and frequently extensively ulcerated; most of the time suffered great torture, so that full doses of opiates had to be resorted to, to give partial relief; was fully treated, according to Bennet, with leeches, scarificator, caustics, etc. Her disease would at times apparently yield, but about the time she would be thought ready to leave the hospital, would suddenly return with renewed force. When Dr. Wharton left the hospital, he said to me that he did not know what would become of Clara, as she had been already a great expense to her kind friends, and was not yet fit to be removed from the immediate eye of a physician. I suggested that, if Mr. Harris were willing, I would take her to my house and attend her there; he saw Mr. Harris, and the arrangement was made. I immediately used the medicated pessary, *and nothing else*, except an anodyne at her monthly period; she soon improved so as to become useful, and has, for the last several months, done the entire duties of our kitchen. I used perhaps half a dozen pessaries in her treatment; she still complains, at times, of erratic pains, but her general health is good; the womb is still rather low, having formed adhesions to the walls of the vagina, but has become accustomed to its position, and tolerates it.

Such cases could be detailed unto weariness, that have yielded to this remedy, but it is not necessary: a mere suggestion of the instrument, also suggests to the mind of the intelligent physician its advantages. It is the very thing we wanted, a means that will hold the womb in place, and at the same time subdue irritation, remove hardness, allay fever, and promote the healing of ulcers.

A few words perhaps should be said as to my motives for selecting the particular articles which compose my medicated pessary. The slippery-elm is the *base*, and without it the thing could not be made at all; but without the sassafras, the pessary would be a *nuisance*. A few hours' confinement in an inflamed vagina, and absorbing its hot, vitiated secretions, will cause such a decomposition as to convert it

into an irritating fœtid mass; but the sassafras prevents this; it effectually stays decomposition, and removes fœtor if already present. I distinctly stated this property of sassafras when treating on dysentery, published in the Nashville Medical Journal in 1853, and transferred to this book.

The balsam copaiva is added to the pessary because of its known power over inflammation of the mucous membrane. Its action in gonorrhœa is believed not to be specific, but general; and it has been reported, by good authority, to cure when applied locally, by injection alone. I have long used it as one of the best means in bronchitis and chronic dysentery, and have lately apparently cured several cases of gonorrhœa in the female, with no other means but the medicated pessary and injections of tepid water. The Dover's powder is introduced for the purpose of relieving present sufferings, but it acts not merely as an opiate—it possesses other powers as a topical as well as an internal remedy.

As regards the application of the pessary, there is but little skill required; patients, with a little instruction, will do that themselves. It is only to be remembered, that it must be dipped in water *immediately* before insertion—a few minutes' delay will make it tenacious, and of difficult introduction; the cup-side must be applied to the os uteri, and the woman directed to remain in a recumbent position fifteen or twenty minutes; by that time the pessary has adjusted itself to the uterus, so as to adhere with considerable force, and there will be no danger of its displacement, even should it be very small, and the vagina morbidly dilated. On this account I find it unnecessary to vary the size to suit the capacity, as with other pessaries. It is best, in all cases, to let the pessary remain until it begins to disintegrate. If there is abundant secretion, this will take place in a few days; if there is great dryness of the vagina, it is best to use tepid injections occasionally, so as to make the pessary act as a poultice.

CHAPTER III.

DISEASES PECULIAR TO PREGNANCY.

As most of the diseases usually treated of in connection with pregnancy have already been considered, they will not again be taken up; but the reader is referred to the various heads under which they occur; as, Peritonitis, or Puerperal Fever; Phlegmasia Dolens, or Milk-leg; Convulsions; Cramp; Costiveness; Flatulence; Acidity; Suppression of Urine, etc. There only remains miscarriage, or abortion, yet to be treated of.

By the term abortion is usually understood a loss of the embryo, or product of conception, before the period of quickening; and by miscarriage, a like accident occurring after quickening and before the full period of utero-gestation has expired. These misfortunes are the result of various causes; such as falls, violent exercise, frights, and other sudden mental emotions; severe sickness, or any other powerfully disturbing circumstance. It is perhaps at times the result of an insufficient life-force in the embryo, or an irritable condition of the womb, which will not tolerate the presence of the new growth; and, at a later period, miscarriage is undoubtedly often occasioned by an indisposition of the uterus to further expansion in correspondence with the growth of the fœtus. But from whatever cause the accident occurs, it is more likely to take place at about the same period in subsequent pregnancies, which makes it very important to guard against the first, and especially a second misfortune of this kind. The means of prevention are of course as various as the causes of the accident, and mainly consist in

avoiding them, or guarding against their influence. There are, however, certain indications which present themselves for our especial attention in almost all cases: such as preserving a regular and quiet condition of the bowels; the preservation of the general health; and especially to keep down morbid excitability in the uterus, and thus guard against its becoming, as it were, restive under the task imposed upon it, and rebelling against further distention. The proper means for removing the various general disturbances have been fully given under other heads in this work; only those which apply to the peculiar condition of the womb itself need now to be referred to; and these are principally such as obviate or remove excessive irritability or rigidity of this organ. The whole list of anodynes and antispasmodics are applicable, and have been resorted to for subduing uterine irritability, such as musk, castor, assafœtida, hops, dulcamara, etc.; and for relieving rigidity of the uterine fibre, the warm or tepid bath, fomentations, oily embrocations, and nauseants, are chiefly relied on.

As the author's manner of preventing these accidents, and also of relieving many other minor afflictions connected with the pregnant condition, are embodied in a paper which he read before the Davidson County Medical Society in 1853, and published by its order in the Nashville Journal of Medicine and Surgery, it will be transferred entire.

ON THE USE OF THE EXTRACT OF HYOSCYAMUS AND OIL OF SASSAFRAS IN SOME OF THE MISFORTUNES ATTENDANT ON PREGNANCY.

I have selected the above as the subject of my paper because I imagine I can offer upon it something that is new, and, what is of more importance, useful in practice.

Very shortly after commencing the practice of medicine, by a favorable state of circumstances, I got introduced into a pretty extensive practice of midwifery; and was soon led to regret the want of more efficient means for relieving many of the ills which are often associated with the pregnant condition than the medical science at that time furnished. Opiates, it is true, afforded alleviation; but gene-

rally at the expense of some other form of suffering or disadvantage, such as checking the natural secretions, disturbance of the head, etc. On one occasion, while waiting upon a tedious case of labor, I amused myself, along with the matrons present, in the enjoyment of the pipe rather freely, and suffered a good deal of vertigo as a consequence. In the course of the conversation which this incident gave rise to, one of the company observed that the dry bark of sassafras, combined with tobacco, would effectually prevent its unpleasant effects upon the head. I laid this up in my mind, and on the first opportunity made the experiment, and found it eminently true; the sassafras not only preventing the injurious effects of tobacco, but speedily removing them when produced. I tested this repeatedly, by smoking in a strong pipe until my head was very disagreeably impressed, and then reloading with a mixture of sassafras bark; a few puffs of which invariably dispelled all unpleasant sensations. I had now satisfied myself that sassafras was an anti-narcotic, so far as tobacco was concerned, and resolved to test its powers upon some other narcotic stimulants, and first selected the hyoscyamus. I added a drop of oil of sassafras to every two grains of extract of hyoscyamus, and made it into pills by the assistance of flour, and tested it first upon myself. Being very susceptible to the influence of nervous stimulants, I began by taking one common-sized pill, and increased the dose until I took five at once, without producing any other effect than a most delightful sleep—such as I had not enjoyed since, when a child, I used to fall down under the shade of a tree when tired at play. I now believed I had obtained the desideratum for which I had been wishing; and experience fully verified my anticipations. It acted like a charm in soothing the excited nerves, and saved my parturient patients of nearly all suffering, except the necessary throes of labor. For some time I was uncertain whether the narcotic property of the henbane was wholly counteracted, or only lessened by the sassafras; but a mischievous little girl solved this question for me. Her mother being pregnant, and suffering much from costiveness and erratic

pains, I made a syrup of butternut, to which I added sixty grains of hyoscyamus and thirty drops of oil of sassafras to the half pint, and directed a tablespoonful to be taken often enough to keep her comfortable. Her little daughter, seeing her take it frequently, supposed it was, of course, something good, and, in the absence of the rest of the family, managed to get hold of the bottle, and finding it sweet, drank all that remained, which was over a gill, and contained at least thirty grains of hyoscyamus. Her mother was at first frightened, and sent to the field for a boy to go after me, but, seeing no immediate unpleasant effects from the medicine, concluded to wait a while. The child, after a little, got into a crib and fell asleep, and slept quietly and naturally for about three hours, when the cathartic effects of the butternut aroused her. No injurious effects followed. I was now fully convinced that the sassafras rendered the hyoscyamus entirely innocent, and have ever since given it in just such quantity as to secure an immunity from suffering. I never pushed it to the extent that the child did but on one occasion. In 1835, when the cholera was prevailing so fatally on Round Lick Creek, in Smith county, while at Mrs. Hearn's, where there were two corpses in the house, and one in the kitchen, and several more in a dying condition, a stout negro man, while walking across the yard with a spade on his shoulder intended to be used in preparing graves, was attacked with such violent cramps as to cause him to scream out. The spasm was of the tonic kind, making his lower extremities and body as rigid as if frozen. I happened to have a bottle of the above syrup in my pocket, which I had prepared for a lady who had been confined the previous evening, and whom I intended visiting in my round, and immediately gave him about four ounces, containing at least forty grains of hyoscyamus. In a few minutes the spasm relaxed, and he assisted all day in burying the dead. I do not give this as a case of cholera; I did not consider it as such; and yet it doubtless was produced by the joint influence of cholera and fear. I did give it, though, in genuine cases of cholera, and always with the effect of

relieving the spasm, provided the stomach retained it a few minutes; but, unfortunately, it was often rejected before it had time to produce any impression.

Having ascertained the controlling power which the remedy was capable of exerting over many forms of disease arising from morbid innervation, and looking upon most cases of abortion and premature labor as originating from that cause, I expected it to prove valuable in their treatment, and was not disappointed when I brought it to the test of experience. I have now used it in all cases of this kind happening in a pretty large practice for about twenty-five years, having more calls than usual in the same amount of general practice, my success having given me some notoriety in that line; and I recollect of no case of failure, where I was called in previous to the occurrence of considerable expulsive uterine contraction. But as *cases* are more impressive than mere general observations, I will, in a very concise manner, give a few of the most prominent which have been treated with this remedy.

Case 1.—1835, Smith county, Pharabee, colored, aged thirty. Commenced bearing children at fifteen; had five in quick succession, after which she aborted five times between the sixth and seventh month. Commenced giving the medicine—namely, the hyoscyamus and sassafras—at the middle of the sixth month, and continued it six weeks. She went to the full period, but had a dead child, after which she had four living children.

Case 2.—1840, S. Berdine's seamstress, aged thirty-five. Had two children when very young, and had aborted nearly every year since, between the third and fourth month. Commenced giving the medicine as soon as she was known to be pregnant, and gave it until the period of quickening. She went her full time; had a fine living child. A year after, again became pregnant; gave the medicine with the same result, after which she ceased breeding.

Case 3.—1843, Mrs. S——. Married at fifteen; had two living children, then three miscarriages in succession about the sixth month. Commenced the medicine a while before

the catastrophe was expected; continued it four weeks; did well, and continued afterward to bear living children.

Case 4.—1845, Mrs. D——, Wilson county. Married young; had a living child, which died; after which she aborted every year for seven or eight, about the third month. Commenced the medicine as soon as pregnancy was known, and continued until after quickening; had a fine child at the full time; three years after, had another; both still living.

Case 5.—Mrs. C——. Married at fourteen; had two children; after which she had severe flooding about every six months for four or five years. She did not consider them abortions; said they came on a week or two after she ought to have been *unwell.* I requested her, in case of another attack, to save all that passed until I could be sent for, which she did. It presented the appearance of blood only, but upon putting it into a vessel of water, I discovered something like an organized mass, and placing this in a fresh basin of water, I had presented the finest specimen of an embryo I ever saw. It was about the size of the chick on the eighth or ninth day of incubation, and very much resembled one. There was an umbilical cord of about two inches in length and the size of a wheat straw, and a placenta, perhaps two and a half inches across the disc, presenting on the maternal surface a most beautiful flocculent appearance while floating in the water. Gestation in this case could not have existed more than thirty-five days. I gave her a supply of the medicine, and directed her to commence taking it immediately after missing a menstrual period. She did so, and next year had a living child.

Case 6.—Thomas Edwards's house servant, aged about twenty-five. Bore children quite young, and had miscarried nearly every year since at about the fifth month. Commenced giving the medicine as soon as she felt the child, and gave it regularly a month, and afterward, whenever she felt pain in her back. Went the full period, and did well. Has since had another.

Case 7.—A sister of the last, living with the minor heirs of E. Hearn, was similarly unfortunate; had had

many miscarriages about the third month. Commenced giving her the medicine as soon as pregnancy was known, and continued it until quickening. Did well.

Many other similar cases could be given, but these are deemed sufficient. It will be observed that in all the above cases, child-bearing was commenced quite young; and my recollection is, that all were of a lax fibre and nervous temperament. In the treatment of the above, and similar cases, the form of the medicine was varied to suit the inclination of the patient—some preferring that of pills, and others a syrup; and the quantity was also proportioned to their susceptibilities. Other remedies were also added, to meet such indications as presented; usually nothing more, however, than a little blue-mass when the liver was torpid, or butternut when there was slowness of the bowels. To sum up the purposes for which I give the above remedy: I give it in all cases of threatened abortion, when not caused by accidents or severe sickness. I use it for all the nameless pains, aches, and disquietudes attendant on conception and gestation. I give it to prevent, and to remove when present, premature and erratic pains in the latter stage of pregnancy. In fact, in all cases in which I am previously spoken to, I put the patient upon its use a week or more before the expected confinement, for the purpose of removing any excessive nervous excitement of the general system, especially of the os uteri; thus preparing it to yield kindly to uterine contraction; and after delivery, I give it to soothe the excited system, and prevent those spasmodic contractions called after-pains. I know that many consider these pains to be necessary and salutary, but females with first children, when the tonic contraction of the uterus is good, do not have them; and I also know that in after-labors they have, in my practice, done very well without them.

Case 1.—I will now give some cases of a different character from the above. In January of 1849, I was called on by a Mr. B——, who had lately moved within six miles of me, and with whom I had had no previous acquaintance, who wished me to cause his wife to abort. He informed

me (which I afterward found to be correct from other sources) that his wife had, the previous year, come to the full period of pregnancy, and that, although he had the services of several experienced accoucheurs, they were unable to deliver her without literally taking the child to pieces, and that they informed him that his wife never could bring forth a living child. He also informed me that two of her married sisters had to have their children delivered in this manner.

I consented to visit his wife, telling him at the same time that I did not expect to procure abortion. I found her a fine-looking lady, rather short for her weight, large muscular developments, and flesh unusually firm. I made an examination per vaginam, and found, indeed, but very little space, owing principally to the fulness and firmness of the soft parts. But my conclusion was, that there was bony room sufficient to admit of the passage of a common-sized head. I accordingly positively refused to procure abortion, but expressed myself confidently that I could put her upon a regimen that would enable her to have a living child. This was about the third month, and I requested him to visit me on the seventh for further instructions; for the present I recommended nothing more than a teaspoonful of epsom salts daily, to keep her system cool. He called at the time directed, and I sent tincture of valerian, with vinous antimony sufficient to slightly nauseate the stomach, which, besides other benefits, would enable her more effectually to carry out my injunctions of low diet. The valerian being a good diuretic, would serve to keep up a drain from the kidneys, and I directed the salts to be taken daily, in such quantity as would secure a moderate purgative effect on the bowels. I also sent a box of the pills of hyoscyamus, to be taken freely during the last stage of gestation. At the full period I was sent for, and was pleased to find that my plan had worked well. There was still a good deal of *embonpoint*, but the textures were all soft and pliant; and on examination, I found a fine dilatable condition of the soft parts. In short, after a common labor, she was delivered of a sprightly common-sized child. It

was characteristic of the family to have large children; and my plan of treatment contemplated a retarding of the growth of the fœtus, as well as a softening of the textures of the mother.

I had often witnessed this effect follow daily purgation, when brought about for other purposes. This was the first instance in which I availed myself of this means intentionally.

Case 2.—Mrs. A——, wife of Mr. A——, of Nashville, a respectable English lady. Had been married over twelve years, and had never borne a child sufficiently matured to live; had generally miscarried between the sixth and seventh months, sometimes between the third and fourth. These misfortunes finally undermined her health, and the usual symptoms of uterine, hepatic, and gastric derangements became prominent, and finally, in the fall of 1852, she presented the symptoms of jaundice in marked form. She obtained the advice of several scientific physicians, but failed to receive more than partial and temporary relief; and for several months had run the round of irregulars and nostrum-venders. At certain intervals her stomach would sympathize so strongly with the deranged liver and uteris, as to throw her into most intense suffering; and during one of these attacks I was consulted. I found her with great tenderness of the epigastrium; frequent retching to vomit; distressing pain in the right hypochondrium, with evident enlargement; extremities cold, with skin the color of a very dark orange; discharges from the bowels like white pipe-clay; urine almost black. She informed me that her skin had been the present color, with slight variations, for seven or eight months; and that during that time there had not been the least trace of bile seen in the discharges. Treatment: a mustard bath to the feet; a large blister over the liver; a blue-pill every six hours; and a tablespoonful of the comp. syrup of valerian every two hours. On the morning of the third day I had the pleasure of witnessing the following favorable symptoms: distress and anxiety entirely subsided; pain in the right side gone; copious dark bilious dejections from the bowels; free discharge of natural

urine, etc. From this time her recovery was rapid; in a week her skin was clear, her tongue clean, and her spirits buoyant. But in order to prevent a relapse, the syrup was continued three times a day for several weeks. I now informed her that in all probability she would soon become pregnant again; but that if she would inform me when the event happened, and put herself under my treatment, I thought I could enable her to go through the period of gestation and bear a living child. Accordingly, in a short time Mr. A—— informed me that he believed his wife was *enciente*, and on visiting her I was convinced that he was correct; I therefore immediately put her upon the use of the following formula, which I have named Anodyne Alterant. Extract hyoscyamus, one ounce; extract butternut, seven ounces; oil sassafras, half an ounce; sup. carb. soda, two ounces; simple syrup, two quarts.

I directed her to use just enough of this to keep up a regular condition of the bowels, and to prevent all irregular action of the uterus. Under this treatment she got along very finely until about the middle of the seventh month, when there was an evident disposition manifested by the uterus to expel the fœtus. Believing that the organ, having formed a habit of expelling its contents prematurely, would not bear much further distention, I thought best to make an effort to arrest any further development of the fœtus; and having succeeded in producing this effect in several other cases in which I thought it advisable, by a free use of this medicine, I directed her to increase the dose, so as to produce tolerably free purgation. This effect was steadily kept up during the remainder of the term, and no more unpleasant symptoms occurred. At the full term I was called on, and, after a rather tedious but not difficult labor, delivered her of a fine, well-formed female child, weighing five pounds. The mother and child both did well. In about two years Mrs. A—— again became pregnant; and being now in good health, thought it unnecessary to apply for medical advice; nothing unusual happened until about the sixth month, when labor-pains suddenly came on; the fœtus was expelled. Six months subsequent, she had

the usual evidence that conception had taken place, and applied to me for aid. I placed her upon the same treatment as on the former occasion, giving the comp. syrup of butternut freely, after the sixth month, with an occasional blue-mass pill, with a view of retarding the development of the child, which it did as before, and with a like happy result. Both children are now living, one five and the other two years old.

Dr. Moses, of Eldridge, Ala., writes:

"Your comp. syrup of butternut for the relief of females I have used frequently, and with not only the happiest results to my patients, but also to myself, getting me a reputation, and large practice among that class of patients."

Query: Would we not be justified in placing females under this treatment who habitually bear unusually large children, and consequently endure severe suffering? So far as I have had experience, the treatment is entirely compatible with the best health to the mother, and safety to the child; for, although small, they have uniformly been vigorous and healthy, and grew finely.

Ten years' further experience has answered the above question satisfactorily in the affirmative. A reliable physician from a neighboring county lately gave me the notes of an exceedingly interesting case which he had successfully treated. In this case three children had, at as many births, been delivered by dissection. The bony pelvis had been distorted by *rickets*. He gave the compound syrup of butternut, in large purgative doses, during the entire period of pregnancy, and at the full time a child weighing three and one-half pounds was delivered, looking plump and vigorous, and is now a sprightly school-girl, and is the only representative of two wealthy families.

CHAPTER IV.

PRACTICAL MIDWIFERY.

The period of utero-gestation, or pregnancy, in the human female is completed in about nine months; but in some cases it falls short of this time a few days, and in others is protracted considerably beyond it. Women commonly have some premonitions or intimations of approaching labor for some days before it commences; such as a subsidence of the belly, its becoming harder and firmer than usual, and a greater feeling of weight. There is also usually more or less discharge from the vagina of a watery secretion, which is sometimes tinged with blood, and is called a *show*. Pains finally come on, at first slight and far between, but gradually increasing both in severity and frequency. These pains usually start in the lower part of the small of the back, and extend round the most dependent part of the belly; they are not what are known as bearing or pressing pains, but are described as cutting, or tearing, or grinding. These pains may continue some hours, or for some days, with but little change, and greatly harass and fatigue the woman, and are borne with the less patience, because they apparently "do no good;" but this is a mistake, as they are the effect of the contraction of the fibres of the womb, whose office is to dilate or open its mouth, and make a way for the escape of the child when expulsive or bearing down pains come on. Much, however, may be done toward mitigating these pains, without destroying their effects. Any means that will assist to produce relaxation and lessen sensibility will be useful for this purpose; such as moving the bowels

by castor oil, or salts, or seidlitz powders, or by injections of warm, weak soapsuds; or sitting over the steam of warm water in which tansy or other bitter herbs has been infused; or the warm hip-bath; or applying cloths wrung out of hot water to the vulva and lower part of the belly. Besides these external means, various internal anodynes may be resorted to, as a few grains of Dover's powder, or a teaspoonful or two of paregoric or Bateman's drops, or a cup of hot tea; but the greatest and most certain relief will be obtained by a tablespoonful of the *anodyne alterant*, which may be repeated every two hours, if necessary.

Another advantage growing out of the use of the above means is, that if the pains are what are called false pains, they will be entirely relieved; but true labor pains will not be suspended by any of the measures named; but the suffering they occasion may be greatly lessened, and their object accomplished much sooner, in consequence of the increased tendency to relaxation which these means occasion. If the finger, after being well oiled, be introduced so as to reach the mouth of the womb, if the pains be those of real labor, it will be found to be dilating; and if, after the continuance of these pains for some hours, there should be no effect made upon the os uteri or mouth of the womb, they may be known to be false pains; and if the mild measures recommended above should prove insufficient to arrest them, twenty or thirty drops of laudanum may be given.

If these pains, constituting the first stage of labor, continue long, and the child remain high, it may be owing to the child being *pitched*, as it is termed; that is, the head does not present fair in the direction of the pelvis, but is thrown too much forward or backward, or to one side. The efforts of the womb will, in time, probably rectify this, but much may often be done by a little management, that will materially hasten the process. If, therefore, the os uteri be found pretty well dilated, but is pointing backward to the hollow of the sacrum, by introducing a finger into it, in the absence of a pain, it can be gently brought forward toward the pubes; and, if held there until after the occurrence of a few pains, the head will usually descend so as to retain it

in the right position. I could always reach the mouth of the womb more readily when the woman was sitting on the lap of an assistant. This is an unfashionable position; but fashion must sometimes be made to yield to utility. After the position is rectified, the lady may resume the bed again.

But if the head is found to rest on the pubes or front bone, the woman should be placed on her back, and pressure be made, during each pain, immediately above the bone, and, if the head be pitched too much to one side, she should be placed on that side, and pressure made upon the upper part of the uterine tumor from the opposite side.

Sometimes, in consequence of an unusual amount of the waters, the child floats in such a way that it does not enter the bones of the pelvis, but may be felt at each pain to descend, and then to recede as soon as the pain ceases. This may continue many hours. Therefore, when I find the womb well opened, and the child floating out of my reach, after each pain, I have the patient placed upon the *lap*, so that the weight of the child may aid the pains; and when the bag of water is distended during a pain, by a little scratching motion with the finger nail, which has been pared so as to have a point, I perforate the membrane, and cause the water to escape.

Sometimes the water is nearly all above the child, and, during a pain, the head prevents its escape. In this case the finger can be introduced to the side of the head, and held there during a pain, so as to form a passage at its sides for the escape of the water. As soon as the womb has been partly emptied in this way, it seems to acquire much greater power of contraction, and a labor will often be finished in half an hour, which would have required many hours without this assistance.

But I wish to be distinctly understood that it is only after labor pains have continued for a considerable time, and the womb is fully open, that it becomes proper to rupture the membranes; for should this be done prematurely, the labor will be much protracted. It is best for the woman to resume the bed as soon as the child's head has fairly entered the bones, as there will be little danger of its again reced-

ing. No further assistance will now be needed until the head passes the bones, and presses upon the perineum; if this should be firm and unyielding, a cloth should be saturated with hot, greasy water, and held to the part, as warm as can be borne without being unpleasant. It is wonderful how much this simple measure will increase the disposition of the soft parts to dilate, and lessen the sufferings of the patient: it will also greatly lessen the probabilities of any laceration or tearing of the parts during the passage of the child. But further to guard against this accident, the assistant should place one hand flat against the underside of the protruding tumor, and press a little backward, and at the same time, with the other hand, gently push the soft parts at the upper part of the vulva, so as to facilitate the escape of the head through them.

Sometimes the womb descends, and seems inclined to pass out with the child. In this case, the fingers should be placed flat against its edge, next the pubes, and the womb pressed back, so as to make it slip over the head. As soon as the head has escaped, the assistant should examine to see if the cord be round the neck, and, if so, it must be slipped over the head, or back over the shoulders, or, if neither can be done, the head of the child must be held as near the pubes of the mother as possible, while the body and breach are made to emerge in a curve. If this be not done, the cord, if short, or many times wrapped round the child, may be drawn so tight as to strangle it, or it may cause the fundes of the womb to be dragged down, as the child is expelled, and produce that distressing state of things known as inversion of the womb. The exercise of a little tact and presence of mind on the part of the operator may always prevent the occurrence of either of these serious accidents.

As soon as the child is born, it should be laid upon a dry cloth, at a sufficient distance from the mother to be out of the way of the water, which is generally considerable, but not far enough to put the cord on a stretch. If the child should not cry, you should see whether it breathes, and if not, sprinkle its breast with a little cold water, and apply

whiskey or camphor to the head. If there be good pulsation in the cord, there will be little danger but the child will soon show signs of life; but if the circulation be found to be suspended in the cord, it should be immediately tied, and the child separated, and immersed in water as warm as can be borne without injuring the skin, taking care to keep the face out of water. Recollect that tepid or lukewarm water is debilitating, but that hot water is stimulating; and if the water is not hot enough to act as a stimulant, it is best to wait until it can be heated, and in the meantime use frictions with dry warm flannel or with the hand.

If these means fail to produce signs of life, you may try artificial respiration; this may be done by placing your mouth to its mouth, and, holding its nose, blow gently until its lungs are inflated, or filled with air; then press upon its belly upward and cause the air to escape; this should be repeated at short intervals until the child revives, or you become convinced that vitality has wholly left it.

Before the child is born, you should always prepare a string for tying the cord, so that it may be made right, and be at hand when wanted. It should be made of strong cotton or flax thread, several strands being twisted together and well waxed; the tie should be made at about two inches from the child, and should be sufficiently tight to effectually prevent bleeding, but not so tight as to cut the cord; another tie should be made two inches farther toward the mother, and then the cord cut between them. As soon as the child is cared for, you should turn your attention to the mother, and ascertain if there be much bleeding; if there is, you should move your hand over the belly until you feel the womb, which probably will be found about the region of the navel, grasp it pretty firmly, pressing downward and backward, which will cause it to contract and close the bleeding vessels, and, at the same time, expel the after-birth. But if this should not succeed, tighten the cord with your left hand, and with the forefinger of the right follow the cord to the mouth of the womb, and turn it round within the neck, which will probably excite the necessary contraction. But if this also fail, you must pass

the hand into the womb, and grasp the placenta; by this act you will necessarily bring your knuckles into contact with the womb, which will hardly fail to excite contraction; now hold still, keeping the placenta grasped, until the pains, or rather the uterine contraction which causes them, expel the hand and the after-birth with it. If there even should be no considerable flooding, provided the womb does not contract so as to expel the after-birth in the course of fifteen or twenty minutes after the birth of the child, you should go through the above proceedings, and insure its early expulsion. Authors differ greatly as to the length of time which it is proper to wait for pains to come on for expelling the after-birth; but as the woman is in constant danger from flooding until it is discharged, and as the longer it is delayed the greater will be the danger of an irregular contraction taking place, called hour-glass contraction, by which the delivery of the placenta is made extremely difficult; and as there is never any thing gained by delay, I always proceed, after the woman has rested a little, to use the above measures for exciting pains, observing the order in which they are named, and never cease until I have accomplished a perfect delivery; and no accident has ever arisen from this timely assistance, but I have many times been called to cases of hour-glass contraction which might have been prevented by these harmless means of exciting the expulsive efforts of the womb. I was once called to a very interesting case of this kind. The lady had been attended by an experienced and one of the few prudent midwives, who informed me on my arrival that the case was a strange one—that there was no after-birth, but that the navel string grew out of the womb. Upon examination, I found that it appeared to be actually as she had told me—the cord appearing to enter the substance of the uterus at about the middle of the fundes; but I knew this could only be apparently so, and that it was a case of complete hour-glass contraction, and proceeded to press my finger firmly at the side of the cord; after some time, the contraction yielded in a degree, and the finger passed up by the side of the cord, and touched the placenta. I now

brought all my fingers together, and again made gradual firm pressure against this ring-like contraction, while, with the left hand upon the belly, I pressed the womb down, and, by exercising patience, finally succeeded in passing the whole hand through the point of contraction, and brought the palm flat against the placenta; this was finally grasped, and by a gentle but firm downward effort was brought through the contraction and delivered. The lady suffered a good deal from the introduction of the hand, which is always the case; but as soon as complete delivery was accomplished, this was all over, and she did as well as usual. Sometimes the placenta adheres with unusual firmness to the uterus; in fact, I suppose always does in hour-glass contractions, which indeed is the cause of this accident—the unyielding mass preventing the contraction of the womb at this point; for did contraction take place, the after-birth would of necessity become detached; but, as we said, the attachment between the two is occasionally so firm as to prevent the contraction, and may require considerable pressure with the finger to break it up. This pressure should always be applied to the placenta so as to force it from the surface of the womb, and not against the surface of the uterus, or it may be injured and inflammation follow.

I suppose these cases of unusual adhesion of the placenta are always the consequence of a degree of inflammation in the uterus, occasioned by falls or other causes sufficient to cause coagulable or plastic lymph to be thrown out, as in pleurisy, by which surfaces lying in contact become glued together.

MANAGEMENT OF THE WOMAN AFTER DELIVERY.

You should never leave the bedside after the delivery of the after-birth until you are certain that the womb has contracted; therefore, if upon examining the belly you find that the womb is still large, and feels soft, you should excite contraction by all the gentle means before recommended, as grasping the womb, friction over the abdomen with the hand, dipping the hand in cold water and then

grasping the uterus, etc. If there should be much wasting, stir a teaspoonful of flour into a glass of cold water, and let the patient take it at a draught. This remedy, though apparently very simple, acts more promptly in arresting profuse bleeding from the womb, as well as from any other internal organ, than any other I have ever tried. Cloths wet in cold whiskey may also be applied to the vulva and belly. Twenty or thirty drops of laudanum, or a grain of opium, may be given, which will powerfully aid in bringing about a permanent contraction, and guard against a return of the hemorrhage.

A broad bandage, made to fit neatly over the abdomen, will also very much aid in preventing flooding; and, besides this, it makes the woman feel more comfortable, and is thought to preserve her proper shape, and prevent a pendulous abdomen; but when a bandage is made to act as a cord or ligature around the belly, it becomes highly pernicious; it therefore should be neatly applied, or left off entirely.

If after-pains should be troublesome, a cloth saturated with camphor and laudanum may be applied above the pubes; or scalded double tansy, or hot whiskey, may be used instead. Small doses of opium, or Dover's powder, may be given at short intervals; or, what is better, a tablespoonful of the anodyne alterant, which may be repeated every three or four hours until it acts upon the bowels. The patient should at first be made warm, if she feels chilly, which she often does, with dry warm flannels; but after reäction is established, all unnecessary covering should be removed, as by causing perspiration she will be more likely to take cold. The diet should be light for a few days, and the bowels moved, if necessary, with castor oil or clysters.

If there should be much milk fever, warm teas should be given, and cloths wrung out of hot water applied to the abdomen; a few grains of ipecac. in a glass of water, and a tablespoonful given every hour or two, will greatly aid the other means.

The child should be put to the breast soon after it is born, so as to open the milk tubes; even should it get ever so little from the breast, this will perhaps prevent difficulty

when the milk does come. If the breasts should become hard, they should be covered with cloths wrung out of hot water containing bitter herbs; or a batter-cake, fried in lard until it is about half cooked, may be placed over them, and renewed occasionally. But if these means fail, and the breasts be about to rise, heat an equal quantity of tar and old bacon grease, and cover the breast with cloths dipped in this. It is not a sightly remedy, but it is the most certain of any of which I have any knowledge; in fact, I have never known it to fail, if applied before matter was formed, and even after that event it will allay the pain and greatly lessen the amount of the rising. When matter is formed, the breast should be lanced as early as possible, and then dressed with the above application, and it will prevent any further progress in the disease, and soon accomplish a complete cure.

MANAGEMENT OF THE CHILD.

As soon as the mother has been properly cared for, the child should claim your attention. There is usually a whitish matter adhering more or less extensively to the surface, which is not soluble in soap and water, and great injury is often done by endeavors to remove it. But, though soap has no effect in softening it, oil combines with it very readily; therefore, lard should be applied freely to all that part of the surface on which it is found, and in a very few minutes, by gently rubbing with a sponge or soft cloth, it can be easily removed.

I should join many of the best authors in wholly condemning the use of soap in cleansing a new-born child, but I suppose it would be unavailing: it would still be done, notwithstanding; I would however pray that the soap be mild, and but sparingly used, as the delicate surface of the infant is exceedingly sensitive, and great nervous prostration, causing fainting, convulsions, colic, etc., may result from the harsh action of so pungent an application as soap to the whole body of the little victim to false notions of cleanliness. I would say, don't wash the child at all, but grease it, and wipe it clean. A soft cloth should now be folded into a fan shape, and the angle, which will be the

middle of the cloth when opened, should be held against a live coal, or to a candle, until a hole is burnt as large as a dime; the margin of this should now be greased, and the navel-cord brought through it, and then laid straight upward on the belly, and the cloth then folded smoothly over, and then a bandage or belly-band adjusted smoothly and moderately tight, so as to keep it in place. Much injury is often done by drawing the belly-band too tight; it should always be loose enough to easily admit of your finger being moved under it. If the child appears to be cold, as they nearly always do, it should be warmed by wrapping it in hot flannel and laying it beside its mother. If it should have the snuffles, apply oil or lard to the surface of the nose. If it be pestered with phlegm in its throat, give it a little oil and molasses and grease its breast, over which apply a warm flannel.

If you want a good baby, you must have a healthy one, and, in order to have a healthy one, you must in the first place furnish it with healthful nourishment; and the best will be its mother's milk, provided she be in good health; if not, the milk of some other healthy woman; next to this, fresh cow's milk, with a third water, and a little loaf-sugar; or the water off of boiled crusts of bread, sweetened with loaf-sugar. Children artificially fed are usually killed by over-feeding; better starve them a little than to ruin their digestion by over-distending the stomach.

But, besides good nourishment, if you want a good baby, you must attend to its comfort in every respect; it should be dressed according to the season—always, though, in loose garments; and must be kept principally in the dark: you must recollect that air and light are both powerful stimulants, and the child has been unused to them, and for the first few weeks it should therefore be fed and otherwise attended to, and then laid away out of sight, and only noticed as its wants demand. Thousands of babies are sacrificed every year to the vanity of dressing them up for show, and parading them on the arrival of every new visitor. Besides proper feeding, proper clothing, and laying them away in the dark to sleep, you must see that the bowels are

regularly moved. Castor oil and molasses will be the best laxative if any be needed.

We have now dwelt pretty fully upon a common case of labor, and given some plain directions for meeting the most common difficulties and casualties which attend or succeed it, and briefly touched upon the management of infants, and we think any thing further would be unprofitable; for, should we go into the detail of all the difficulties which may arise in the practice of midwifery, from wrong presentations of the child, or malformation of the mother, or from complications with diseases, etc., we would have to write another volume, and then you would n't read it, and if you did, would still not be competent to practice without also understanding the entire science of medicine, and not even then, unless you should devote your entire attention to the subject; for no man, however learned in medicine, and how extensive soever may have been his experience, is competent to manage difficult and complicated cases after he has withdrawn his attention from the subject for a few years, and pursued some other avocation, or had his mind diverted to other subjects.

CHAPTER V.

DISEASES PECULIAR TO INFANTS.

Most of the diseases usually arranged under the head of diseases of children, not being confined exclusively to the early period of life, have been treated under other and more appropriate heads, as measles, whooping-cough, croup, skin diseases, etc.; there therefore remain but a few complaints of any moment yet to be considered, and the most important is,

HIVES—RED-GUM, OR STROPHULUS.

There is a certain disease well known to mothers and nurses, and country practitioners who have been some years in the practice, but the young physician may consult his standard works on practice in vain for any satisfactory description. Hence, he will most probably deny the existence of any such disease as *hives*, except as another name for croup; and yet he will presently be called to treat a case, occurring within the first month after birth, which he sees at once is not croup, but is an equally formidable disease, and will most probably baffle all his skill, the infant dying in a few hours from strangulation. The women tell him the child died of *hives;* and as it *died*, it was the *bold hives*—which name, fortunately for his reputation, saves him from all blame, as the general belief is that bold hives always kills.

Upon a careful examination of authors upon this subject, I find the mild form of this disease is considered as a variety of red-gum, while the graver form is confounded with croup. Dr. Wood so treats it, describing the mild

form very accurately, as a variety of strophulus or red-gum, a general description of which, including this, he gives as follows:

"In all its forms, strophulus is, with few exceptions, an acute disease, generally beginning to exfoliate and disappear in one or two weeks, and seldom continuing longer than a month. It is very rarely attended with fever, and often occurs without any observable disturbance of health. When febrile symptoms do occur, it is not always certain whether they are essentially associated with the eruption, or proceed from some other cause. Strophulus is almost always an innocent complaint. Its retrocession is thought sometimes to have been followed by serious internal irritations; but it is very difficult always to determine, in such cases, whether the disappearance of the eruption is cause or effect."

Now, from this description, we would naturally conclude that the disease was of not much moment any way; not more important than itch, nettle-rash, milk-scab, etc.; and yet, if you will inquire of country practitioners of what disease the most children die under six months, they will say *hives*. I have said *country practitioners*, for my observations have led me to believe that the disease is much more common and more fatal in healthy country situations than in cities: for this, a reason will be given hereafter. I have so frequently seen this disease present symptoms not described in the books, and assume a character so much more grave than is assigned it by writers, that I have been almost ready to doubt its being the same malady; but its milder forms being the same as described, I have concluded that some writer, centuries back, who had never seen the disease in its worst aspects, wrote a description of it, and others have merely copied without investigation. For some years past, I have embraced every opportunity of interrogating practitioners from every part of our country upon this subject, and have ascertained that they all are familiar with the disease in its gravest forms. I therefore take it for granted that it is a much more formidable

disease throughout the world than agrees with the descriptions in the books.

The only cause of difficulty in this disease referred to by authors, is when the eruption is repelled from the surface, and the irritation transferred to the stomach and bowels. But I have never known any very serious consequence arise from this cause; the means they *all* prescribe will usually meet the difficulty very promptly; viz., a warm bath, a gentle emetic, and a few testaceous powders. It is only when the irritation extends to the *air-passages* that the disease becomes really dangerous; and this form has been wholly overlooked, or confounded with croup, by every writer I have had an opportunity of consulting. The eruption is not always repelled in these cases, neither do I believe that the irritation is even transferred from the surface to the air-passages, for I have often seen the rash plentifully on the skin, at the same time that the infant was threatened with suffocation from a filling up of the air-tubes by a thickening of their coats, and a secretion of tenacious mucus. It is true that the rash always fades before the child actually dies, because the capillary action has then become too low to sustain it; but a *striking in* of the eruption is not the cause, nor is a *transfer*, but an *extension* of the irritation from the surface to the air-passages. Hence the means recommended by writers for the relief of cases in which the disease has been transferred to the stomach and bowels will, in this, prove of no avail, but may do positive harm; for the means that will increase the eruption on the surface, will at the same time increase the irritation in the mucous lining of the air-passages, and, consequently, increase the morbid secretion which is already threatening suffocation. Whoever has tried nauseants and the ordinary warm bath in this disease, when there was considerable eruption on the surface, and the child breathing hurriedly, and auscultation detected very decided mucous rhoncus, has presently ascertained that he had gained nothing by the treatment, but injured his patient. For although nauseants, if carried to *vomiting*, may for a time

appear to have produced benefit, by disgorging the phlegm which was obstructing the bronchia, yet the formation of it is actually increased by the measure, and the little sufferer will presently breathe with more difficulty than ever. A repetition will obtain a still shorter respite, at the expense of a still more abundant secretion; and if the practitioner now resorts to the warm bath, with a hope of succeeding, he will find the advantage obtained equally deceptive. While the child is in the water, the inhalation of hot vapor will, for a time, expand the lungs, and render the morbid secretion more fluid, so that the air finds a readier passage into the air-cells, and breathing is consequently easier; but the bath is rapidly exhausting nervous power, which will soon reduce the vital action of the capillaries, disqualifying those of the lungs still further for returning to a healthy condition, and lessening the ability of the respiratory apparatus for taking on such action as is necessary for freeing the lungs from the accumulating mucus; while at the same time the action of the bath upon the surface, by direct sympathy with the mucous lining of the bronchia, increases the amount of the secretion which is wanted to be thrown off. We see, therefore, good reasons why these measures which are mainly relied on, and which are so uniformly successful in relieving a transfer of the disease to the stomach and bowels, should not only fail to afford relief when the disease has extended to the lungs, but aid it in its too certain victory over the vital powers; and the attendant will very soon have the mortification to see his little patient turning livid from a failure in the aeration of the blood, and still less able to make the extraordinary respiratory efforts required for forcing the air through the tenacious mucus, or to discharge it. But fortunately, while the black blood sent to the brain is destroying nervous power, it also destroys sensibility, and all conscious suffering is soon at an end; and *coma*, being presently followed by *asphyxia*, soon terminates the struggle. Now, as children who die of this form of disease always turn livid, presenting purple spots before they die, or immediately after, if convulsions have hastened death before asphyxia had time to do its

work, the matrons of the land call it the *bold hives;* and hence, as this appearance is never presented until death is inevitable, or has actually taken place, the opinion is well founded that *bold hives* is never cured. As children who die of *croup* generally present this same appearance, and from the same cause, it is generally confounded with this form of hives by nurses, as well as by doctors. But they are very different diseases—*this* is peculiar to early infancy; I have known of no case occurring after the first year, and rarely after six months, and by far the greater number happen within the first month after birth; but *croup* is not a disease of *infancy;* few cases happen under two or three years. Then, again, they affect different locations: croup is a *cynanchia trachialis*, and this a *cynanchia bronchialis*—that is, croup is located in the wind-pipe, and mostly at its upper extremity, while this is located in the minute branches, and perhaps in the air-cells; croup is characterized by a shrill sound, as if breathing through a metallic tube, or like the crowing of a cock, as the name implies; but this is known by a flat plashing sound, as of air passing through water, or more like gas escaping from paste while boiling; it resembles *mucous rale* in pneumonia more than any thing else, and is the result of about the same condition.

But though croup and this form of hives are very different in their commencement, they run very near together in their termination; both usually kill by producing asphyxia; and croup, though always attacking the upper part of the trachea at the commencement, often extends its influence downward, until, if protracted, it is seen to produce the identical effects upon the minute branches, and the air-cells, characteristic of hives, occasioning, too, the same rapid accumulation of morbid secretion.

I have already hinted that this form of hives is probably much less prevalent in cities than in the country, and I now say it is more prevalent in the most healthy regions of country; the same I think will be found to be true also of croup; and the reason that both are the most prevalent

where there is the highest health, is because both are diseases of high action, laying hold of the most precocious developments of the sanguino-nervous temperament. This being the kind of subject most commonly attacked by this form of hives, it may readily be perceived why it should be seldom met with in city practice, such constitutions being rarely found there among infants; and it also explains the omission of writers to notice the disease, as all, as far as I know, have learned disease as presented in cities.

Treatment.—The disease, then, at its commencement, being one of high action, the indications are for the use of such measures as will subdue over-action; but while selecting them, we must remember also that our patient, though robust and sanguine, is also highly nervous and excitable, rendering the system extremely subject to collapse of nervous power; we must not, therefore, make any heavy drafts upon the source of vital energy; hence bold depletory measures are entirely out of the question; such means only should be resorted to as will subdue excessive arterial action, with the least expense to the general strength, combined with appropriate means for allaying nervous excitability. I am not at all certain that I have fallen upon the best possible measures for fulfilling these indications, for all my efforts have occasionally failed of success, but have proved much more certain than the plan I was taught and practiced in my early professional career. They are as follows: When called to see an infant, and I perceive its face flushed, eyes somewhat suffused and slightly injected, considerable restlessness, not crying as from pain, but making rather a grunting moan, often desiring a change of position, seizing hold of the breast with energy, but letting go after a few draws as though for want of breath, breathing rather short, and more than usual heaving of the chest, I suspect at once that I have this disease to contend with, and inquire of the mother or nurse if the child has had any *breaking out.* If I am informed that it has not, I examine still closer the condition of the surface, and I will perhaps detect the appearance of an eruption *within* the skin; but

if this should fail to be detected, I proceed further, and, having the infant's face turned toward a strong light, I excite it to cry, so that the *fauces* and *pharynx* may be fully exposed; and if the surface appears to be suffused, with more or less distinct evidence of a fine papillary eruption, I become satisfied it is this form of hives, but that it has *commenced* in the air-passages, and has not yet extended to the general surface. In this stage there is not much secretion from the mucous lining, the difficulty in breathing being occasioned by over-fulness of the vessels, and a thickening of the lining of the cells and air-passages. In this stage I direct a mustard bath, as warm as the child can bear without occasioning positive suffering, the object of which is to equalize the circulation, and invite the eruption to the skin, so as to produce an equilibrium of action between the external and internal surfaces. This bathing should only be continued a few minutes at a time, and the child enveloped in a light flannel in the interim; at the same time I administer, internally, grain doses of *calomel* every hour, and a tablespoonful of *catnip* or *hop tea* every fifteen minutes. The mercurial is given to produce revulsion to the liver, and also to make that organ perform some of the labor usually assigned to the lungs. As soon as bilious discharges are obtained I discontinue the calomel, but continue the tea, for the purpose of quieting nervous excitement and maintaining the action on the liver and bowels. These measures will rarely fail to procure entire and permanent relief. But if I have been called in later, and find the child breathing with great difficulty, and exhibiting the peculiar sounds indicating profuse secretion in the air-vesicles, the countenance anxious and distressed, the pulse hurried, etc., I adopt a very different set of means. In this case the excessive secretion *must* be diminished, or the child will inevitably die of asphyxia; it cannot be thrown off fast enough, by any means which can be devised, to prevent a fatal accumulation. My only hope now is in the *cold wet sheet*. I order a panful of cold water, and another of very warm water, and dipping a large towel, or some other conveniently obtained cloth, in the

warm water, envelop the child's lower extremities in it; and then saturating another in *cold water*, apply it *around* its naked body, and over it a dry flannel. As soon as reäction is fairly established, I remove the cloths, not desiring a perspiration. I give nothing in this case but the teas above named, administered cold. A fresh application of the cloths should be made every hour or so, until entire relief is obtained; then calomel may be administered as before, for the purpose of revulsion, and to free the blood from the carbon which has accumulated in consequence of imperfect aeration. If given sooner, the sickness occasioned by it might have completed the prostration. The *rationale* of the cold application is easily given—it arrests the morbid secretions, just as it does internal hemorrhage, by acting as an astringent; it also excites the surface. I deprecate a sweat, because it would invite an increase of the secretion in the lungs, by concert of action with the surface.

CYNANCHIA TRACHIALIS—CROUP.

This is a disease of high action, most prevalent in healthy country situations, and in northern latitudes. It is seen much more frequently to the north of Mason & Dixon's line in our country than to the south. I met with ten cases of this disease in Ohio, in the same amount of practice, to one in Tennessee. Here, the great majority of the cases which I have seen, that were supposed to be croup, were nothing more than common cold in a phthisical child; the stifled cough and wheezing respirations of which are easily distinguished from the ringing cough and crowing respiration of *cynanchia trachialis*. This misnaming of the disease has led many to look upon croup as rather a slight complaint, which a warm bath, or a snuff plaster to relax spasm, and a little melted butter and honey to allay the tickling of the glottis, are fully able to subdue. But croup lays hold with a giant grasp, and demands the prompt interference of our most efficient measures to meet it successfully.

In the management of the first stage of this disease, I have never been able to improve upon the plan taught me

by Doctors Hamilton and Judkins, then of Mt. Pleasant, Ohio, when a student of medicine; which was the warm bath, and calomel and ipecac. in such doses as would produce, first, active emesis, and then a brisk cathartic effect; and, at the same time, a fly-blister to the throat and upper part of the chest. As there is usually great insensibility to the influence of medicine in this disease, the dose must be very large, say from ten to twenty grains of each, and then made to act as an emetic, by free draughts of weak mustard water. This plan will fail in very few cases to give entire relief, if adopted early; but if the disease has progressed until it begins to assimilate the severe form of *hives*, described in the last chapter, these measures become very hazardous; and for reasons therein given. I treat this stage of croup just as I do the advanced stage of *hives*, to which I will refer the reader. I would even now, however, apply the blister as soon as considerable relief had been obtained by the cold cloths, in order to prevent a relapse.

OPHTHALMIA.

This disease might have been arranged under particular inflammation; but as the cases which most often demand our attention, and involve the greatest danger of a disorganization of the eye, are met with in early infancy, in order to give prominency to this fact, I have reserved its consideration for the present chapter.

When called to a case laboring under this disease, we should consider whether it is catarrhal, malarious, or scrofulous, as our diagnosis must, to some extent, determine the plan of treatment. This distinction can generally be made with ease, but occasionally it is quite difficult. In fact, a case may be the combined result of several causes, and present a mixed character, in which it may be difficult to determine which element preponderates. A person, for example, may have been impressed by malaria, and then exposed to atmospherical vicissitudes; and both of these causes may operate upon a scrofulous constitution, and then the case might be both catarrhal, malarious, and scrofulous. But generally one of these causes so far impresses itself

upon the disease, as to give it character, and determine the peculiarity of treatment. Common catarrhal or inflammatory ophthalmia is usually recognized by the mode of its accession, it being ushered in along with other symptoms of *cold*. But little skill and less medicine are necessary to manage this form of sore eyes successfully, if taken at an early stage. A dose or two of epsom salts, a hot mustard foot-bath, and bathing the eyes in warm water, will effect very certain and speedy relief. But if the attack comes on after exposure to a malarious atmosphere, and is ushered in with many of the symptoms commonly associated with an attack of malarious fever, such as headache, loss of appetite, dinginess of the surface, a sense of weakness, etc., we may safely consider it malarious ophthalmia, and treat it as we would an attack of bilious fever, with calomel, quinine, etc., paying very little attention to the local disease of the eyes. But if the patient has had an attack of sore eyes, without any of the common symptoms of cold, or those of the first stage of bilious fever, the first indisposition being an unusual sensibility of the eye to light, subsequently becoming a dark-red, and always being much relieved by shutting out the light; and especially if we detect other evidences of a scrofulous diathesis, we may, without hesitation, set it down a case of scrofulous ophthalmia, and treat it accordingly. The plan which has succeeded best in my hands in managing this form of sore eyes is, to put the patient upon an alterative course of medicine internally, and apply anodyne collyria to the eye. The best alterative course is sarsaparilla and iodide of potassa; and, as a local application, I have found nothing to compare with the following: Spirits of nitre, one ounce; chloroform, one ounce; morphine, five grains; rose-water, four ounces; saturate raw cotton and bind it to the eyes on going to bed.

I will illustrate the effect of this treatment by reporting a case. In the spring of 1854, I was called to see a little daughter of Mrs. Lane, South Vine street. I found the child's eyes so exceedingly sensitive, that it was with great difficulty I could examine them at all. They were swelled and deeply injected with blood, and had to be covered with

several folds of some dark material to keep down intense suffering; yet when it was quite dark, she could uncover her eyes, and would play about the yard with as much glee as children usually do in the day. Her mother informed me that she had suffered in the same way the most of the summer of '53, and that medical aid had been resorted to without benefit. I looked upon the disease as inflammatory, complicated with chylopoetic derangement, and put her upon strict diet, purgatives, and cooling applications to the eyes, but no benefit followed. And after trying my prescription for several weeks, it was dropped, and another physician, eminent for his skill, called to take charge of the case; who, taking the same view of the case which I had, pursued a similar mode of treatment, with a like want of success. She was then taken to the Springs, but still obtained no relief; but as the weather became cool, she gradually improved, and remained pretty clear of suffering all winter. Being at the house on some other occasion, I examined her eyes, and found that one had suffered but little, but there was considerable opacity of the cornea of the other. I now began to suspect that I, as well as all the other physicians who had attended on the child, had mistaken the nature of the case; that the disease was not primarily inflammatory, but that the child was of a scrofulous habit, and that the disease first manifested itself by morbid sensibility of the retina; and that the intense irritation of light, acting upon this morbidly sensitive nerve, created so much irritation as to set up inflammation in the organ. I informed Mrs. Lane that I thought I had a better understanding of the disease than I had had the previous summer, and that if the child's eyes commenced getting worse, as usual, in the spring, I would like to watch them. I was accordingly sent for, and found that I was correct, so far as the origin was concerned: that the morbid sensibility was the cause of the inflammation, and not it, as we all had supposed, the cause of the sensibility. I did nothing for a time but watch the progress of the disease, until it had assumed a virulence equal to any previous attack. I then put her upon the plan stated above, and in a very few days had the satisfaction of seeing a

decided amendment; and in a few weeks the disease was so effectually removed, that she could run in the sun without a bonnet, and has remained well until now, notwithstanding she went through the ordeal of an attack of measles during the summer. The plan pursued was, to apply pledgets of cotton, saturated with the collyria, to the eye every night on going to bed; remove them in the morning and let them remain off an hour or so, and then reäpply, and keep them on until evening; then again leave them off an hour or two. After considerable amendment, the application was only made at night; and finally, only occasionally. The internal medicine was composed as follows: two ounces of comp. syrup valerian, (my common fever syrup,) two ounces of comp. extract sarsaparilla, and one drachm of iodide of potassium. Of this I ordered a teaspoonful *after* each meal. I combined the fever syrup in this prescription, for the purpose of giving tone to the bowels and restraining diarrhœa.

I have treated several other cases of a similar kind with the same flattering success—cases which were originally of the true catarrhal kind, and also those having a malarial origin, in scrofulous constitutions.

NATURAL DEFECTS.

Children are often born with some part of the body lacking. Some of these omissions of nature are incompatible with life, as the want of a head, or of the heart, etc. But other defects, as the absence of a limb, will not prevent the child from living. Occasionally the natural openings of the body are imperforate, and may be remedied by an operation. I have seen several instances in which the urinary orifice was closed, and required the use of the lancet. A more serious case occurred to me some years since, in which there was no external opening to the bowels. As I reported this case, with my manner of operating, and its success, to the Nashville Journal of Medicine and Surgery, I will take the liberty of transcribing it.

Prof. Bowling: In the June number of your Journal I

find an interesting case of imperforate anus, reported by Prof. Buchanan; and, as such cases are not of very frequent occurrence in this country, I have concluded to give you a short account of one which occurred in my practice a few years since, which differed in some of its features from the one which he reported.

I was first called to see the case when the child was about ten days old. Upon examination, I found no mark indicating where the anus should have been. All was round and smooth—no indentation between the nates; but immediately under the scrotum there was a small opening, into which I could insert a common probe, and through which a little of the most fluid contents of the bowels had exuded. This opening, I suppose, had existed at the birth, and, by giving vent to enough of the coloring matter of the fæces to stain the cloth, had prevented the nurse from noticing the condition of things until the child was more than a week old. A neighboring physician was immediately called in, who gave a decided dose of calomel, I suppose with a view of forcing a larger opening. The child grew rapidly worse under this treatment, and I was finally sent for.

I attempted to reach the bowel by a probe introduced through the small opening above named, but could not succeed, owing to its tortuous course, and was, therefore, wholly unable to determine how much of the bowel was lacking. But, as the child was now vomiting stercoraceous matter, and I believed imminently threatened with convulsions, I resolved on an immediate attempt to procure an opening as the only possible means of saving it. I accordingly selected the part where I believed the anus should have been, and proceeded to operate with a common scalpel. I proceeded cautiously, lest I might wound an artery, not knowing what other malformations might exist; but after cutting to the depth of about an inch and a half, I had the pleasure of reaching the closed end of the bowel, which, not waiting to be cut, was torn open by the spasmodic contraction of the abdominal muscles, and the contents were projected horizontally across the room, striking the opposite wall, and barely giving me time to remove my head from their line of march.

How much good the calomel exhibited did in preparing it for this easy ejection I do not know.

The little sufferer was now completely relieved; but it required a good deal of warm brandy toddy to prevent it from sinking from the effects of so sudden a removal of the stimulus of distention. After reäction was once established, it required no further general treatment. I used a conical roll of linen, kept in place by the T bandage, to prevent adhesion, to be removed every time a discharge from the bowels was indicated by the motions of the child.

On the next Sunday the matrons of the neighborhood met, and held a consultation over the case, and decided that I had made the hole in the wrong place, and dispatched the father after me to come and do my work over. He accordingly followed me to church, and called me out. I told him he might rest easy on that subject; but, as he informed me that a partial closing of the opening had taken place, I went with him home. I now enlarged it, and directed the means to be continued as before directed.

In two or three weeks afterward I was again called on to see the case. I found the vent sufficient to admit the passage of tolerably liquid stools, but offering obstruction to them when somewhat hardened. I now enlarged the incision to something like an inch, and directed the bougie to be discontinued, but to strictly apply the bandage, depending upon the pressure of the fæces to keep the opening from closing. To further this end, I directed that the bandage should not be removed until the child showed by its straining that the contents were fully in the artificial opening. This plan succeeded finely, and I had no further trouble with the case: in a month or two all care was discontinued.

Two years afterward I was called to deliver the mother of another child, and made an examination. Every thing looked as natural as if no malformation had ever existed. The little opening under the scrotum closed soon after the operation was performed—the sphincter acted efficiently. He is now a fine boy of six years old, the pride of his father.

MATERIA MEDICA.

We cannot be expected to give a history of all the remedies which have gained reputation in the cure of disease, or even all that have been prescribed in this work; but we will present a sufficient number of indigenous medicinal herbs to enable our readers to always find something at hand to answer the purpose when those most relied on may not be easily obtained, or from frequent use, or any other cause, fail in producing their usual effect.

After this chapter on indigenous remedies, we will conclude by giving a chapter of formulas, or recipes, in which all the compounds recommended in this work, as well as a number of others, will be given, with the mode of using them, etc.

AGRIMONY, *Agrimonia*—Grows two or three feet high, in hedges and the margins of fields; blossoms in July, on long spikes, yellow. It is known by the vulgar name of *cuckold,* from the seeds sticking to the clothes in the fall of the year.

In whey or tea, it forms a good drink in fevers. The juice of this plant, or a strong infusion of the roots, two handfuls to a quart of boiling water, and sweetened with honey, is said to be an excellent medicine in the jaundice, scurvy, and chronic diarrhœa. I know it to be good in cankerous sore mouth. Dose of the infusion, half a pint; of the juice, a wineglassful three times a day.

ALDER, BLACK, *Alnus Nigra*—Sometimes called Vir-

ginia Winterberry, grows in most places, generally sending up several slender stalks to the height of ten feet, and bears a red berry.

The bark is tonic, and accordingly is used in substance, or in strong decoction, like the Peruvian bark, in intermittents and other cases of debility, as dropsy, gangrene, etc. The inner bark in the shape of poultice externally, with the decoction internally, a handful or two boiled slowly in three pints of water to a quart, is celebrated both by Professor Barton and Dr. Mease as of admirable use in arresting the progress of mortification. A strong decoction of the berries formed into a syrup with molasses, in doses of a wineglassful, or two teaspoonfuls of the powder of the inner bark, is said to be a good purge.

Dr. Thatcher recommends a decoction or infusion of the bark, taken internally in doses of a teacupful, and employed also as a wash, for the cure of cutaneous eruptions, particularly of the herpetic kind.

ALUM ROOT, *Heuchera Americana*—Called also American Sanicle. The root is a very intense astringent. It is the basis of a powder which has lately acquired some reputation in the cure of cancer. Professor Barton observes that he does not believe that the alum root has cured genuine cancer; but that it has proved very beneficial in obstinate ulcers, which have been mistaken for cancers. He says it is one of the articles in the Materia Medica of our Indians, the powdered root of which they apply to wounds, ulcers, and cancers.

ANGELICA, *Angelica*—Grows in marshy woods and hedges, flowering in June and July. It is frequently cultivated in our gardens.

Every part of this useful vegetable partakes of its aromatic virtues, but especially the root, which, in the form of powder, tincture, or tea, is useful in flatulent colics. Conjoined with dogwood bark, or any other tonic, it may, like the Peruvian bark, be employed with advantage in intermittents and low stages of fever. The dose, one teaspoonful in substance of the former to two of the latter. It may

also be employed in the form of strong decoction, in doses of a gill, or, in cold phlegmatic habits, in tincture, either alone, or with dogwood berries, centaury, lemon peel, or any other article of the bitter and tonic class. A strong decoction of the root, combined with red oak bark, a large handful of each to a pint of boiling water, makes an admirable gargle for relaxed and spongy gums, and ulcerated sore throat.

APPLE, PERU. See *Thorn Apple.*

ARBUTUS. See *Bearberry.*

ARROW ROOT, *Maranta Arundinacea*—Is cultivated in the Southern States. A tablespoonful makes a pint of the finest jelly in nature, which affords the most nutritious food in acute diseases for children. To persons laboring under bowel complaints, as diarrhœa and dysentery, it is of itself a remedy.

The jelly is made in the following manner: To a tablespoonful of the powdered root add as much cold water as will make it into a thin paste, and then pour on boiling water through the spout of a kettle, stirring it at the same time briskly till it becomes a clear jelly; after which, season it with sugar and nutmeg, and, to render it still more palatable, a little wine or lemon-juice may be added. But, for children, blending it with new milk is best.

ASARABACCA SWAMP, *Asarum*—Grows in low-lands. It has but two leaves, which rise immediately from the root, and divide from one stem. The flowers are purple and bell-shaped, and proceed from between the leaves.

The whole of this plant has a nauseous, bitter taste. The root, from a half to a tablespoonful in powder, operates both upwards and downwards. In the form of infusion, a half handful to a quart of boiling water is said to be serviceable in the whooping-cough, in doses of a tablespoonful to children every half hour, or oftener, until it vomits; and in doses of a teacupful three times a day, it has been used with success to promote the menses, or *courses.*

AVENS COMMON, *Geum Urbanum*—Grows a foot high by fences and borders of fields. The blossoms are white or yellowish in July. Its smell resembles that of cloves.

A strong tincture of the root, two handfuls, steeped in a quart of spirits, given to the quantity of a half wineglassful, or the powder, in doses of a teaspoonful several times a day, has afforded an excellent remedy in intermittents and other disorders where strengthening medicines are requisite.

There is another variety of this plant, called water avens, throat root, cure-all, which is to be found in boggy meadows. The blossoms are purplish, and appear in May. Its properties are the same as the preceding. A decoction of it has been found beneficial as a gargle in ulcerated sore throats, which probably gave rise to the name of *throat root* or *throat wort*.

BALM, *Melissa Officinalis*—Makes an excellent tea in fevers; and when sweetened, and acidulated with the juice of lemons or cream of tartar, forms a most grateful beverage.

BARBERRY, *Berberis Vulgaris*—Grows along the sides of roads in hedges; leaves oblong, tender, and subject to the rust; the flowers are in clusters; the fruit oblong and acid; the stem is defended by three thorns.

A double-handful of the berries, boiled in three quarts of water to two, and given in doses of a teacupful four or five times a day, sweetened with white sugar, is extolled as a remedy in diarrhœa, dysentery, and jaundice.

BAYBERRY, *Myrica Cerifera Humilis* — Called also Dwarf Candlebury Myrtle; grows in swamps to the height of two or three feet, and bears numerous green berries, of which tallow is made.

The inner bark, in poultice, applied morning and evening to scrofulous swellings, and drinking a teacupful of a strong infusion of the leaves, is said to have wrought surprising cures in a few weeks.

BEARBERRY, *Arbulus Uva Ursi*—Bears whortleberry—wild cranberry. Is a low evergreen shrub, somewhat resembling the myrtle.

The leaves have a bitter astringent taste, and unquestionably possess medical virtues, especially in relieving the *irritation of the stone*, or gravel.

The dose: half a pint twice or thrice a day of a decoc-

tion made of the leaves, a handful to a pint, or a teaspoonful in substance two or three times a day.

BEECH DROPS. See *Broomrape Virginia.*

BENNE, *Se Samum Orientale*—Is now cultivated in South Carolina and Georgia. The leaves, by infusion, afford an excellent mucilaginous drink, which is used with manifest advantage in dysentery, diarrhœa, and cholera infantum.

The seeds yield a pure and pleasant oil, which, in doses of from one to two wineglassfuls, acts well on the bowels.

BITTER-SWEET. See *Nightshade, Woody.*

BLACKBERRY, OR DEWBERRY—These, though different in name, are nearly, if not entirely, the same in nature. They both bear the same kind of berry, which, when ripe, is pleasant and wholesome.

The roots of these vines, but especially of the dewberry, are famous as astringents. From my own observation in practice, two handfuls of the clear root in three pints of milk or water boiled to a quart, and given in doses of a teacupful every two or three hours, have often cured obstinate diarrhœas.

BLACK SNAKE ROOT. See *Virginia Snake Root.*

BLAZING STAR. See *Devil's Bit.*

BLOOD ROOT, *Sanguinaria Canadensis*—Has a variety of names, as Red Root, Puccoon, Indian Paint, Turmeric. It grows about a foot high in rich woodlands, and flowers in April. The leaves are roundish and deeply indented, somewhat like the white oak leaves—stems naked, supporting single flowers; blossoms white. When the fresh root, which is about the size of the little finger, and blood red, is broken, a juice issues in large drops resembling blood.

The root in powder, from twenty to thirty grains, is strongly emetic. Professor Barton considers it nearly equal to the Seneca or rattle-snake root in cases of ulcerous sore throat, croup and hives, and other similar affections. Professor Dexter exhibits it in doses of one grain of the powdered root, or ten drops of the tincture, every two or three hours, as an excellent diaphoretic in colds, or pleurisies, rheumatism, and other inflammatory complaints.

CALAMUS.

BLOODROOT. (*Sanguinaria Canadensis.*)

BEARBERRY. (*Uva Ursæ.*)

A tincture may be prepared by steeping a handful of the root sliced in half a pint of spirits. It may also be exhibited in the form of decoction, a handful to a quart of boiling water, and a tablespoonful for a dose every two or three hours. The juice of the root is said to be good for destroying warts.

BONE-SET. See *Thoroughwort.*

BROOMRAPE VIRGINIA, *Orobanche Virginiana*—Grows from Canada to Georgia, and rises six or eight inches high, of a brown color, brittle sprigs, but no leaves; the root is bulbous. It is generally found under the shade of the American beech tree; hence it is sometimes called beech drops, but more generally cancer root.

Every part of this plant is considerably astringent, and along with the astringency, especially in the recent plant, there is combined a peculiar and extremely nauseous bitterness. It has been celebrated as a remedy in dysentery, but its principal reputation is in cancerous affections.

It is certain, says Professor Barton, that the powder of cancer root has been of great service, externally applied to obstinate ulcers, some of which had resisted all the ordinary applications. The fresh bruised root has also been applied with good effects to cancerous sores. In the form of decoction it has been found useful as a wash to gallings in warm weather, or excoriation of the skin. It is also esteemed a good application in cases of St. Anthony's Fire.

BURDOCK, *Arctium Lappa*—Grows on the roadside, on rubbish and ditch banks, bearing purplish blossoms in July and August.

The juice of the fresh leaves, or an infusion or decoction of the roots, operates gently on the bowels. This is supposed to be a good blood-purifier, and is much used for that purpose. The juice is given in doses of a wine-glassful, and the decoction half a pint three times a day.

CALIMUS, OR SWEET FLAG, *Acorus Calimus*—Grows in marshy situations, and in shallow water, and may be known by the long sword-shaped leaves, resembling those of the blue and yellow flags, but narrower, and of a bright green. The root is like that of the blue flag in

appearance, but has a strong aromatic smell, and a warm pungent taste. The flavor is greatly improved by drying.

The root possesses stomach virtues, and is frequently grated into water, and given to children for flatulent colics, free of fever. It is sometimes used as an ingredient with dogwood, cherry bark, centaury, etc., in morning bitters, as a preventive of the ague in low marshy situations.

CAMOMILE, *Chamœmelum*—Grows well in our gardens. An infusion, or tea, made of the flowers, is excellent to warm and strengthen the stomach in cases of indigestion, loss of appetite, and other complaints arising from debility. It is also of great use in doses of a teacupful three times a day, as a preventive of the ague and fever, and bilious fever in sickly situations. In the form of fomentation and poultice it is serviceable in discussing hard tumors.

CAMOMILE, WILD. See *Mayweed.*

CANCER ROOT. See *Broomrape Virginia.*

CANDLE-BERRY MYRTLE. See *Bayberry.*

CARAWAY, *Carum Carui*—A choice aromatic; grows kindly in our gardens. The seeds assist digestion, strengthen the stomach, and are serviceable in flatulent colics. The dose of the seeds in powder, from one to two teaspoonfuls to adults.

CARROT, WILD, *Daucus Carato.*—The wild carrot grows two or three feet high, and flowers in July. The seeds have an agreeable aromatic smell, and, in a slight degree, a warm, pungent taste.

An ounce or half a handful of the seeds infused in a pint of water, and taken in doses of a teacupful every hour or two, is said to give immediate relief in suppression of urine, and is also serviceable in promoting the menses.

The roots of the carrot cultivated in our gardens, beaten to a pulp, form an excellent application to cancerous and other ill-conditioned ulcers, allaying the pain, checking the suppuration and fœtid smell, and softening the callous edges.

CASTOR OIL, *Ricinus Communis* — Flourishes well among us. The kernels yield almost a fourth part of their weight in oil, which is obtained from them either by ex-

pression or decoction. Expression is the best method of preparing; but the common mode is to shell the seeds and boil them in water, and as the oil rises, to skim it off.

Castor oil is a gentle and useful purgative. In doses of a teaspoonful, it is the most suitable purge, when not rancid, to expel the meconium from new-born infants.

CENTAURY, *Centaurium minor*—Is a fine stomach bitter, and either in a simple infusion, or united with calimus or angelica root, is excellent in relaxations of the stomach and general debility.

CHERRY TREE, WILD, *Prunus Cerasus Virginiana.*—The bark of this tree is an excellent substitute for the Peruvian bark. I have myself frequently employed it in the cure of ague and fever, bilious fever, and other diseases where tonic medicines were proper. In intermittents of long standing, I have found it more efficacious when united with the Virginia snake root, in the proportion of one part of the latter to four of the former. It may be employed, either in powder or decoction, in the same doses as the Peruvian bark. A strong infusion of it in sound cider is said to be useful in the jaundice. A decoction of the bark will be found a good wash to ill-conditioned ulcers. The cherry of the tree, when ripe in autumn, is much used in the Southern States, for making bounce and cordial. The gum of the common cherry tree is a good substitute for the gum-arabic.

CINQUEFOIL, *Potentilla Reptans*—Grows on pasture grounds, and is something similar to the strawberry. The stalks trail along the ground, and have but five leaves on each stalk, placed together, of an equal size, and bear a yellow flower.

The whole of the plant, particularly the root, in the form of decoction, a handful to a quart of water or milk, boiled slowly, and sweetened with loaf sugar, is recommended as a remedy for the dysentery and bowel complaints. The dose for adults is a teacupful three or four times a day, and one-third or half the quantity for children.

COLUMBO AMERICAN, *Columba Americana*—Grows plentifully in the Western country, in the vicinity of the

Ohio river; and, from abundant experiments, is found fully equal to the imported. It has long been esteemed a powerful antiseptic and tonic; and, as such, has been employed with manifest advantage in gangrene, cholera morbus, bilious vomiting, bilious fever, indigestion, want of appetite, etc. It may be given in powder, in doses of a small teaspoonful every three or four hours, or in decoction, in doses of a teacupful. Two or three ounces of the root, steeped in a quart of spirits, form an excellent bitter, which, when taken in mint water, or infusion of orange peel, in doses of a tablespoonful, is excellent for moderating the retching in pregnant women.

COMFREY, *Consolida*—Grows about two feet high, in moist situations near springs, but is cultivated in our gardens. The leaves are large, similar to water-dock, flowers of a pale blue color; the roots long, rather thicker than a man's finger, mucilaginous, and black externally, but white within.

A handful of the roots boiled in milk, and given in doses of a teacupful three or four times a day, is a popular remedy in dysentery, bowel complaints, and the fluor albus, or whites. It is also beneficial as a diet drink in cases attended with a burning heat in making water.

CORIANDER, *Coriandrum*—Is cultivated in our gardens. The seeds are warm, and of a pleasant flavor, and, in doses of a tea to a tablespoonful, have been found useful in cases of indigestion and flatulence. When mixed with senna, they more effectually correct the odor and taste of the infusion than any other aromatic. They also form an excellent addition to ingredients for bitters.

CRANE'S BILL, *Geranium Maculatum*—Improperly called by some Crow Foot. It grows five or six inches high in meadows and woods; has long, slender stalks, with seven long, narrow leaves at a joint. The root is generally crooked and knotted, blackish on the outside, and reddish; has a rough taste, with an aromatic flavor.

When applied externally, it is highly extolled for its styptic power in stopping hemorrhages of wounded vessels. The powdered root, in doses of a teaspoonful three or four

times a day, or a decoction in milk, used as a common drink, is said to be excellent in checking immoderate menstrual discharges; also the whites, gleet, and obstinate diarrhœa.

CROW FOOT, *Ranunculus Bulbosus*—A very acrid plant, growing in meadows and fields. The leaves or roots bruised and applied to any part of the body will soon raise a blister, and ought to be used when the Spanish flies cannot be obtained. The roots, collected in the fall, may be very well preserved through the winter by burying them in some fine dry sand.

DANDELION, *Leontodon Taraxacum*—Vulgarly called piss-a-beds, grows in meadows, pastures, and on roadsides and ditch-banks, with yellow flowers, which blow from April to September, and possess the remarkable quality of expanding early in the morning, and closing in the evening.

The root, leaves, and stalk, contain a large proportion of bitter, milky juice, which, in doses of a wineglassful twice or thrice a day, is good in chronic inflammations of the liver, dropsies, difficulty of making water, and other complaints arising from obstructions of the viscera. It may also be taken in the form of a strong decoction, from a gill to a half pint, twice or thrice a day.

DEADLY NIGHTSHADE. See *Nightshade, Deadly.*

DEVIL'S BIT, *Veratrum Luteum.*—The root of this plant is a very pungent bitter, and is employed as a tonic, either in the form of tincture or infusion. In this last form it has been employed as a vermifuge.

DEWBERRY. See *Blackberry.*

DILL, *Anetheum Gravolens*—Flourishes in our gardens, producing seed delightfully aromatic, which, in doses of one or two teaspoonfuls, is excellent to remove flatulent colics, and assist digestion.

DOCK WATER, OR WATER DOCK, *Rumex Aquaticus*—Grows in wet ditches, mill-ponds, on sides of rivers, and in shallow water, flowering in July and August.

Half a pint of a decoction of the leaves or roots, two handfuls to a quart of boiling water, or two or three teaspoonfuls of the dried roots in powder, taken two or three times a day, is an admirable medicine to sweeten and purify

the blood in scurvy, scald-head, tetter-worm, and other cutaneous diseases. The fresh roots bruised, and mixed with vinegar, or in strong decoction, are a good cure of the ring-worm, and have often subdued that filthy complaint, the itch, when quack medicines, and even sulphur, had failed. They are also worth trying, in the form of a poultice, to tumors and cancerous ulcers.

The *curled dock*, *narrow and broad-leaved dock*, which grow in yards and cultivated fields, are all varieties of this useful plant, and possess similar virtues. It is said the narrow-leaved dock, applied in the form of fomentation and poultice, to a cancerous sore, and from a pint to a quart of the decoction taken daily, has made cures.

DOGWOOD, *Cornus Florida.*—The bark of this famous tree, which may well be termed the cinchona or Peruvian bark of North America, possesses, like that, all those tonic powers which give it such admirable control over intermittents, gangrene, and all diseases proceeding from debility.

Like the Peruvian bark, but in somewhat larger doses, it may be used in substance or decoction, infusion or tincture, either alone or conjoined with snake root, or some of the aromatics. But the shape in which it will be found most agreeable is that of an extract, which is easily prepared by boiling the bark, straining it, and then evaporating it very slowly to the consistence of honey. To prevent the fatal effects of burning it, the vessel in which it is evaporated should be of the wide mouth sort, placed in a large pot of boiling water, and often stirred towards the close of the operation.

The dose is from half to a whole teaspoonful, three or four times a day. The beautiful red berries of dogwood, combined with lemon peel, snake root, calimus, or any other warm aromatic seeds, form a fine bitter against the common fall complaints.

ELDER, COMMON, OR BLACK, *Sambucus Niger*—Grows to the height of a small tree, in hedges, and along the border of meadows; the young shoots are full of pith, and the old stalks empty; flowers in July, and the berry is of a blackish purple color when ripe.

The expressed juice of elderberries put into a plate, or wide mouth vessel, and evaporated in the sun to the state of an extract, in doses from a tea to a tablespoonful, acts as a good aperient medicine. A tea made of the leaves, a large handful to a quart of boiling water, and taken freely, removes a costive habit, promotes perspiration, and thus proves useful in eruptions of the skin, St. Anthony's fire, colds, dropsies, and all obstructions of the viscera. The inner green bark, steeped in wine, a large handful to a pint, or made into a strong decoction, purges gently, in doses of a gill. The flowers, stewed with lard, form a good ointment for burns.

ELECAMPANE, *Inula Helineum*—Grows three or four feet high, in stony pastures, and by the roadside; flowers large and yellow, in July and August; and the root, when dry, has an agreeable aromatic smell, and in a decoction sweetened with honey, or in the form of syrup, or a teaspoonful of the powdered root in molasses, is recommended for promoting expectoration in asthma and coughs. The fresh root, in ointment or strong decoction, is said to cure the itch.

ELM, AMERICAN, OR SLIPPERY, *Ulmus Americana*—Steeped in water, it forms a cooling demulcent drink, very useful in febrile diseases; and externally, as a poultice, in gun-shot wounds, tumors, and all ulcers and sores accompanied with irritation. A teaspoonful of the inner bark in powder, to a quart of boiling water, or a simple infusion of the bark in boiling water, forms an astonishingly rich jelly, which I have often tried with the happiest effects in diarrhœa and dysentery. With the addition of a little sugar, lemon-juice, citron, or nutmeg, it might be made an excellent substitute for sago or arrow-root. For its further uses, see Preparations of Slippery Elm, in the chapter on Formulas.

EMETIC WEED, OR INDIAN TOBACCO, *Lobelia Inflata*—Grows in dry fields, and rises to the height of one or two feet, with branched stems, flowering in July and August, with blown cups, filled with numerous small seeds.

The blossoms are solitary, in a kind of spike, of a pale blue color. The leaves are oblong, and have a very acrid and pungent taste, similar to that of tobacco.

The leaves collected in August, while the plant is in blossom, and carefully dried and preserved, act as a speedy and excellent emetic, in doses of from ten to twenty grains; or it may be exhibited in the form of a saturated tincture, in doses from a tea to a tablespoonful.

As it is a medicine of considerable activity, it should be given in small quantities, and the dose repeated every ten or fifteen minutes, until it excites vomiting. From its speedy operation as an emetic, it is useful in croup and whooping-cough. In small doses it is of great utility in consumptive and other coughs, by exciting expectoration. It is particularly valuable in asthma.

ERGOT, OR SPURRED RYE, *Secale Cornutum.*—Rye is subject to a disease, in low wet situations, or when a hot summer succeeds a rainy spring. The spurious substance called *ergot* is found projecting from among the leaves of the spike or ear; it is a long crooked excrescence, resembling the spur of a cock, pointed at the extremity, of a dark brown color externally, and white within. Some spikes are wholly occupied by spurs, while others have two or three only, interspersed with genuine seeds of rye.

This extraordinary substance possesses considerable medicinal properties. In lingering and laborious cases in childbed, it acts as an invaluable medicine, speedily inducing forcible pains, and expediting delivery. It is given in the form of powder, in doses of from five to thirty grains; but it has sometimes been found more active in the form of decoction, prepared by gently boiling a drachm of the powder in half a pint of water, of which one-third may be taken every twenty minutes, until proper pains shall have commenced.

It is proper, however, to caution the domestic practitioner against employing this powerful medicine. The powerful and continued efforts of the uterus, from the effects of the ergot, prevent the retreat of the child's head after being

advanced, and the unceasing pressure often occasions the death of the child. This medicine has also been successfully employed in cases of obstructed menses.

FEATHERFEW, *Matricaria Vulgaris.*—It is frequently cultivated in gardens. A handful of the leaves and tops infused in a quart of water, and given in doses of a teacupful three or four times a day, is used by country people to promote the menses, to strengthen the stomach, to raise the spirits, and promote perspiration in colds and fevers.

FENNEL, SWEET, *Fœniculum Dulce*—Grows kindly in our gardens. A teaspoonful of the seeds, with a little sugar and spirits, is a common remedy among the country people in flatulent colic. To children afflicted with the above complaint, an infusion of the seeds, sweetened, is highly serviceable. The seeds yield an aromatic oil, which, in doses of from two to twelve drops, removes flatulence, promotes expectoration, and is serviceable in coughs.

FERN, FEMALE, OR BACK-ACHE BRAKE—Grows near ponds, and in moist pastures, about twelve inches high. The leaves are single, winged, about a hand's length; the root is about the size of a goose-quill, of a brown color, very sweet, and of a mucilaginous taste.

A quart of a strong decoction of the roots, and a pint of honey, formed into a syrup by gentle simmering, and given in doses of a tablespoonful every hour or two, is esteemed highly beneficial in all violent coughs. It is said that three parts of the roots of this plant, and one part of sumach root, boiled slowly in any kind of spirits, until it becomes slimy, and then applied warm to the spine, has frequently relieved the back-ache; hence the vulgar name back-ache brake. It has also been employed as a remedy for the rickets in children.

FERN, MALE, *Polypodium*—Called also sweet fern, male polypody. It grows in woods and stony places, flowering from June to October.

The root, when chewed, is somewhat mucilaginous and sweet, and afterwards astringent and bitter.

Sweet fern in powder, in doses of from one to two teaspoonfuls, or a decoction, a pint a day, followed on the fifth

day by a dose of castor oil, or some purgative medicine, is esteemed a powerful medicine against worms, and particularly the tape-worm.

FLAG, BLUE, OR WATER FLAG, *Iris Pseudacorus*—Grows by the brink of rivers, in swamps and meadows, blossoming in July; flowers blue, variegated with white, yellow, and purple.

The juice, in doses of a teaspoonful, diluted with water, is said to be an active cathartic medicine, and to produce copious evacuations from the bowels, and to be useful in dropsy. It produces similar effects in powder, from thirty to sixty grains, and has been employed as a vermifuge. In the form of decoction, used as a diet drink, it is greatly extolled in venereal cases.

FLAG, SWEET. See *Calimus*.

FLAX-SEED, *Linum*—Possesses great medicinal virtues. An infusion or tea is the most suitable drink for patients laboring under violent colds, coughs, difficulty or burning in making water. The flax-seed syrup, which is prepared by adding a pint of honey to a quart of strong tea, and simmering it away slowly by a gentle fire for an hour, observing to take off the scum as it rises, is a most valuable medicine in diseases of the breast and lungs, in doses from a tea to a tablespoonful every hour or two, or oftener, when the cough is troublesome. The flax-seed bruised also forms one of the best emollient poultices with which we are acquainted.

FOXGLOVE, *Digitalis Purpurea*—Has lately been cultivated in our gardens. It rises to the height of two or more feet, and its leaves are large, egg-shaped, notched like a saw, and covered with hairs. Blossoms of a beautiful purple color, hanging downwards in a row along one side, which are compared to the fingers of a glove, and in the inside are elegantly mottled with spots like little eyes.

The foxglove has been employed with advantage in those disorders where the frequency of the pulse requires to be abated. In pleurisy and pneumonia, and the incipient stage of consumption, it has, by diminishing the circulation

through the lungs, frequently succeeded in arresting the progress of the disease.

Foxglove possesses also diuretic power, and has long been employed in dropsy. It unquestionably acts powerfully as a diuretic, or in evacuating the water in dropsy. It should not be given in such doses as to excite much sickness or purge; otherwise it will not produce its diuretic effect. The best rule for its administration is to commence with the smaller doses, twice or thrice a day, and gradually increase the quantity daily, until the medicine either act, on the kidneys, the stomach, or the bowels; and on the first appearance of any of these effects, it is to be suspended.

After evacuating the water, tonic or strengthening medicines should be employed. The leaves of this plant are the part in use, of which from one to three grains in powder may be given to an adult twice or thrice a day, alone, or united with some aromatic, or the powder may be formed into pills with soap, or the crumbs of bread, or it may be given in the form of infusion, by infusing a drachm of the dried leaves in half a pint of boiling water, for four hours, adding to the strained liquor one ounce of any good spirits; from one to two tablespoonfuls to be given twice or thrice a day, as a medium dose for an adult. From twenty to sixty drops of the tincture may be taken in a little mint-water or tea two or three times a day. The medicine has also been externally applied with good effects. An infusion of it is recommended as a good wash for painful cutaneous eruptions or ulcerations. An ointment prepared by simmering the leaves in lard or fresh butter, has been found successful in scrofulous ulcers and scald-head.

GARLIC, COMMON, *Allium Sativum*—Is highly stimulating, and therefore useful to persons of cold, phlegmatic constitutions. It provokes the appetite, assists digestion, removes flatulence, promotes expectoration and urine, and hence has long been used in scurvy, asthma, and dropsy.

Where it cannot be taken in substance, the best form is either in syrup or pills. Externally applied, it blisters the skin. A poultice or cataplasm of equal parts of bruised garlic and crumbs of bread, mixed with sharp vinegar, ap-

plied to the soles of the feet, in the low stage of acute dis orders, or nervous fever, is good to raise the pulse and relieve the head. Sydenham says it exceeds all other applications for occasioning a revulsion from the head, and that the efficacy of garlic, thus applied every night until slight inflammation be produced, is superior to Spanish flies. It is an excellent remedy in cases of croup or violent sore throat. (See *Onions.*)

It will also be found a good application to the pubes in producing a discharge of urine, when its retention has arisen from want of due action of the bladder. When made into an ointment, it is said to disperse cold and indolent tumors, and has been esteemed for its efficacy in cutaneous eruptions. In deafness, a small clove of the root, wrapped in gauze, cotton, or wool, moistened with the juice, and introduced into the ear, has frequently proved an efficacious remedy, if repeated twice or thrice a day.

GENTIAN, *Gentiana*—Grows on the sides of roads and in waste pastures, two or three feet high. The stem is strong, smooth, and erect; the leaves, which rise from the lower part of the stem, are spear-shaped, large, ribbed, and rough; flowers yellow, in whorls, terminating in yellow bitter berries.

Its virtues are equal to the imported. It has long occupied the first place in all recipes for bitters, whether used to provoke the appetite, or give tone to the system. It may also be taken in the form of infusion, a small handful of the root to a quart of boiling water, in doses of a teacupful three or four times a day.

In the form of a decoction, it is used with decided advantage in pneumonia, where the fever is nervous: it acts as a tonic and sudorific; a tincture of it is esteemed in dyspepsia, given in doses of one-fourth or half an ounce. It is said to increase the appetite, prevent the acidification of the food, and to enable the stomach to bear and digest articles of diet which before produced oppression and dejection of spirits.

GROUND HOLLY, *Pyrola Umbellata.*—It is sometimes called Pipsissewa, which is its Indian appellation. It pos-

GENTIAN. (*Gentiana lutea.*)

HEMLOCK. (*Conium Maculatum.*)

sesses in an eminent degree the same properties as Bear's Whortleberry, which see.

HEMLOCK, *Conium Maculatum*—Grows to the height of six or seven feet, in rich land, near ditches, and in moist, shady places. It is an umbelliferous plant, with large leaves, of a dark green color on the upper side, and a whitish green underneath, much resembling parsley, especially the leaves of the smaller sorts, whose poisonous quality is the most violent. The stalk is round, smooth, hollow, and marked with brown or red spots; the flowers are white; the seeds greenish, flat on one side, very convex, and marked with five furrows on the other. The root is long, yellowish without, white and fungous within, and somewhat resembling a carrot. It changes its form according to the season; and the leaves have a rank smell, resembling the urine of a cat, but do not much affect the taste.

This poisonous plant possesses great medicinal virtue when judiciously employed. It has been used with considerable advantage in painful cancerous ulcers, venereal ulcerations, cutaneous affections, gleets, painful discharges from the vagina, and in a variety of cases of scrofulous affections. It has also been of great efficacy in epilepsy, chronic rheumatism, and jaundice. Externally applied, it has been useful in discussing scirrhous tumors, particularly those of a scrofulous nature.

The proper method of administering hemlock inwardly is to begin with a grain or two of the powder of the leaves, or the inspissated juice, and gradually to increase the dose until the head is affected with slight giddiness, or it occasions some sickness, and trembling agitations of the body, or produces one or two evacuations the morning after the dose. One or more of these symptoms are the evidences of a full dose, and these continue until none of these effects are observed; and then, after a few days, increase the dose, for little advantage can be expected but by a continuance of full doses.

The dried leaves are less liable to injury from keeping than the inspissated juice. The leaves should be collected in June, when the plant is in flower, and its peculiar smell

strong. The drying of the leaves should be performed quickly before a fire, on tin plates. The proof of the drying having been well performed, is the powder's retaining the odor of the leaves, and the deepness and freshness of the color. It should be kept in close vials, and secluded from the light.

HENBANE, BLACK, *Hyoscyamus Niger*—Grows at the sides of fences, about old ruins, and on dung-hills, and with the dung is sometimes carried into gardens, where, from its similitude to parsnips, it is mistaken for them; and when eaten, produces stupor and apoplectic symptoms, terminating in death. It rises from one to two feet in height; the stalks are thick, woody, irregularly branched, and covered with a hairy down; the leaves surrounding the stalk at their base stand irregularly; they are large, soft, and downy, pointed at the ends, and very deeply indented at the edges; their color is a grayish green, and they have a disagreeable smell; the flowers are large, egg-shaped, and of a dirty yellowish color, with purple streaks. The root is long, tough, white, and when recently cut through, smells like liquorice.

According to Dr. Stork, the juice of this poisonous plant inspissated, and exhibited in doses of from one grain to twenty every twenty-four hours, has relieved many from palpitation of the heart, a tendency to melancholy, coughs, and other spasmodic disorders and convulsions, and this after other means had failed. In my own practice, when combined with the oil of sassafras, it has proven to be one of the mildest and best anodynes and antispasmodics of which I have any knowledge. See Anodyne Alterant, in chapter on Formulas.

HOPS, *Humuli*—Are an agreeable, strong bitter, principally used in making malt liquors. They also induce sleep; hence the popular remedy of a pillow of hops to procure sleep in the delirium of fever and insanity, which not unfrequently succeeds. They give out their virtues to spirits or water.

In the form of fomentation and poultice, hops serve as a most valuable application to ill-conditioned ulcers, or painful cancerous sores.

PINKROOT. (*Spigelia Marilandica.*)

PURPLE FOX-GLOVE. (*Digitalis purpurea.*)

BLACK HENBANE. (*Hyoscyamus niger.*)

once or twice a day, or it may be steeped in wine, and taken in doses of a small wineglassful.

HOUSELEEK, *Sempervivum*—Grows on the roofs of houses and old walls, flowering in July.

The juice of this plant, mixed with honey, is said to be of considerable service in the thrush of children. Stewed with cream, it is a great favorite with the country people for the cure of corns, fresh burns, stings of wasps, bees, and other external inflammations. An infusion of the leaves is also said to be cooling and laxative.

HYSSOP, *Isup Hyssopus*—Is cultivated in our gardens. An infusion of the leaves, sweetened with honey, or in the form of syrup, is useful in humoral asthma, coughs, and other disorders of the breast and lungs, accompanied with inflammatory symptoms.

INDIAN PHYSIC, OR AMERICAN IPECACUANHA, *Spiræ Trifoleata*—Grows about two or three feet high, in low woods and meadows.

Professor Barton says the root, which is the part made use of, is a safe and efficacious emetic.

In the dose of thirty to forty grains in powder, for an adult, it is one of the most safe and certain emetics. In broken doses of five or six grains, every two hours, it is equally valuable as a sudorific. It may also be given in infusion, a handful to a pint of boiling water, of which a small teacupful may be taken every fifteen or twenty minutes until it promotes vomiting.

INDIAN TOBACCO. See *Emetic Weed.*

INDIAN TURNIP, *Arum Maculatum*—Wake robin. The leaves are generally bespangled with black and white spots, striped in gaudy style. The root is bulbous, resembling a small turnip.

Both this and the leaves, in a fresh state, are extremely acrid, and have been used with advantage externally for blistering, and internally in cachexies, rheumatism, and all other complaints of cold phlegmatic habits. Of the fresh root, from ten to thirty grains may be taken thrice a day, in the form of emulsion, with gum-arabic, or cherry-tree

gum. The root, which should be used fresh, may be kept so for a year, by burying it in a cellar in sand.

JAMESTOWN OR JIMSON WEED. See *Thorn Apple.*

JERUSALEM OAK, OR WORM SEED, *Chenopodium Anthelminticum*—Has long been employed to expel worms. One or two teaspoonfuls of the seed, with molasses or honey, are generally given to a child two or three years old in the morning, on an empty stomach, and the dose is sometimes repeated at bed-time. It ought to be continued for several days. When there is an aversion to using it in this form, the seed may be boiled in milk, and taken in doses of one or two wineglassfuls, or the expressed juice of the plant, sweetened, may be exhibited in doses of a tablespoonful. The oil, which is prepared from the seed, possesses the same virtue, and is found a more convenient form of giving the medicine.

JUNIPER, COMMON, *Juniperus Communis*—An evergreen shrub, growing on dry barren commons, and hilly ground.

A strong decoction, made of a handful of the tops and berries to a quart of boiling water, in doses of a teacupful three or four times a day, has long been employed in dropsy, scurvy, and gravel, or difficulty of urine. The oil of juniper possesses the same properties in a high degree, and imparts them to ardent spirits. The peculiar flavor and well-known diuretic effect of Holland gin are owing to this oil.

Hoffman found it of great use in debility of the stomach and intestines, particularly in old people. The stronger preparations have been found useful in uterine obstructions, and in paralytic affections of the bladder.

LEMON TREE, *Citrus Medica*—Is now cultivated in the Southern States, and holds the first place among the cooling and antiseptic vegetables to correct the putrid tendency of animal food in summer.

The acid of lemon, from its antiseptic properties, has long been employed as a remedy in the scurvy. Lemon or lime-

juice, diluted with water, and the addition of a little sugar, forming lemonade, serves as one of the most grateful beverages in bilious and nervous fevers. The dried peel of lemons is a grateful aromatic, and as a stomachic generally constitutes one of the ingredients of bitters.

LETTUCE, *Lactuca Sativa.*—The dried juice of the common garden lettuce is found to be but little inferior in sedative power to opium. In those constitutions in which opium cannot be employed without producing very disagreeable consequences, we may safely employ the lactucarium or lettuce opium, or tincture. Many eminent physicians bear testimony to the good effects of this medicine in procuring sleep, in alleviating pain, and in allaying inordinate action, particularly a troublesome cough. And in no instance has it been found to produce nausea, costiveness, or irritation of the skin, which generally follows the use of opium or laudanum.

The best method of obtaining the inspissated juice of lettuce in abundance is as follows: Let the ice-lettuce, which is considered best for this purpose, be planted in rows; and when the top of the stem is about a foot above the ground, cut off about an inch from the top of each plant. The milky juice rises immediately above the wounded surface. But it is better to cut off the tops of all the plants before you begin to collect. After having done this, begin to collect the milky juice by means of a wet sponge, where the incision was first made, and as you go along, cut off a thin cross slice from the stem of each plant, leaving fresh wounds. After going round the plants five or six times in the way mentioned, they will cease to yield any more milky juice at that time. But this process may be repeated two or three times in a day. The milky juice collected in this way is to be expressed into a teacup or any similar vessel. It soon acquires a dark brown color, like opium obtained from the poppy; has all its other sensible qualities; and hence it may justly be distinguished by the title of lettuce opium.

It may be administered in the form of pills, in doses from

one to two grains. The tincture is prepared by adding one ounce of the extract to a pint of spirits, which may be given in doses of a teaspoonful.

LICHEN, OR LUNGWORT, *Lichen*—Is a thin shell or skin which grows on the bark of the white oak tree, resembling the lungs, from whence it is called lungwort.

It is said to possess the same qualities as the Iceland moss, or lichen, so celebrated in the cure of consumption.

An infusion, a handful to a quart of boiling water, used as a common drink, or a strong decoction formed into syrup, with honey or sugar, may be taken in doses of a wine-glassful three or four times a day. It is also said to be a useful medicine in the whooping-cough.

MADDER, WILD, *Rubia Tinctorum*—Is cultivated in Pennsylvania and South Carolina for dyeing a fine red color, but also possesses great medical powers.

It has been highly recommended in visceral obstructions, particularly of the uterus, in coagulations of the blood induced either by falls or bruises, in dropsical complaints, and especially in the rickets. It may be given in powder from five to fifteen grains to children, and from a half to a whole drachm three or four times a day to adults. When taken internally, it possesses the remarkable quality of tinging the urine of a red color, and produces similar effects on the bones of animals, when eaten with their food.

MAGNOLIA—Goes by several names, as beaver-tree, swamp sassafras, elk bark, Indian bark. It is an agreeable aromatic tonic bitter medicine.

An infusion or decoction of the bark has been used in the ague and fever, and is much celebrated among the western Indians as a remedy in rheumatism. I am informed, from a respectable source, that John Dickinson, Esq., author of the celebrated Pennsylvania Farmer's Letters, was completely cured of a violent attack of the chronic rheumatism by a strong decoction of the twigs of the magnolia.

The species *Magnolia Grandiflora*, evergreen laurel, sometimes called tulip tree, grows to the height of eighty feet near Savannah. The bark of the root of this tree is also used as a substitute for Peruvian bark in intermittent

fevers. The cones or seed-vessels of the magnolia, which is commonly called *cucumber tree*, have been advantageously used in Virginia, in the form of tincture, in rheumatic complaints.

MAIDEN HAIR, *Asplenium Trichomanes*—Called also milk-waste, spleenwort—Grows on old walls, rocks, and shady stony places, generally to the height of seven or eight inches; leaves very fine and soft, and spotted underneath; stalks of a dark purple color; flowers from May to October. Its leaves have a mucilaginous sweetish taste, without any peculiar odor.

An infusion, by pouring a quart of boiling water on a handful of the dry herb, sweetened with honey, and taken in the quantity of a teacupful every hour or two, or a spoonful in the form of syrup, is said to be good in tickling coughs, hoarseness, and disorders of the breast, proceeding from acrid humors in irregularities of the menses, and obstructions of the viscera.

MALE FERN. See *Fern, Male.*

MALLOW, COMMON, *Malva Sylvestris*—Grows in hedges, footpaths, and among rubbish; flowering from June to August. The leaves possess a mucilaginous sourish taste.

A decoction of this plant is said to be useful in dysenteries and gravel complaints, though it is chiefly employed as an emollient poultice to produce suppuration.

MANDRAKE, OR MAY-APPLE, *Podophyllum Peltatum*—Grows on low grounds, two or three feet high, leaves generally three, broad at the base, and terminating in a sharp point; flowers yellow; the fruit resembling a lime, or a small yellow apple, and is much admired by some.

The root is an excellent purgative, and may be taken in doses from ten to thirty grains in substance, or double the quantity infused in a gill of water.

The best time of gathering the mandrake, for medicinal purposes, is in autumn, when the leaves have turned yellow and are about falling off. The Indians dry it in the shade, and powder it for use.

MARSH MALLOW, *Althæa Officinalis* — Grows in

MAY APPLE. (*Podophyllum Peltatum.*)

RUE. (*Ruta Graveolens.*)

DANDELION (*Dens Leonis.*)

marshes and wet places. The leaves have a soft woolly surface, feeling like velvet. The flowers are of a white pale flesh color, and appear in August.

Every part of the marsh mallow, and especially the root, when boiled, yields a copious mucilage, on account of which it is employed in emollient cataplasms or poultices, for softening and maturing hard tumors. It is likewise of eminent service in the form of infusion in asthma, hoarseness, dysentery, and gravel.

MAY-APPLE. See *Mandrake.*

MAY-WEED, OR WILD CAMOMILE, *Dog Fennel*—Grows about two feet high, in pastures near fences; the flowers are yellow, resembling camomile flowers, and are frequently used as a substitute for them.

MEZEREON, *Daphne Mezereum*—Called also spurge laurel, dwarf bay. Grows plentifully in woods and shady places near the Ohio, and flowers in the month of February or March. The fruit is a berry, in which is found a single seed. The leaves are spear-shaped, and the flowers grow of a beautiful red or rose color.

The bark of the root of this plant is the part used in medicine, and has an extremely acrid burning taste in the mouth and fauces.

Dr. Withering asserts, that a patient who lived under extreme difficulty of swallowing for three years, was effectually cured in two months, by chewing the root as often as she could support its irritating effects. The fresh root, scraped and applied to the surface of the skin, affords an efficacious blister; when taken internally, it determines to the surface, and has been found greatly serviceable in rheumatism and obstinate cutaneous diseases. Its principal use, however, is in the venereal disease, in the last stage, or when mercury has failed. It is particularly efficacious in relieving nocturnal pains, and removing venereal nodes. One gill to a half pint of the decoction, made of two drachms, or a handful of the bark, with an equal quantity of liquorice root, boiled in three pints of water to a quart, may be taken three or four times a day.

MOTHERWORT, *Leonurus Cardiaca*—Grows in waste

places, and flowers in July and August. The flowers are in thorny whorls, purplish within, and white on the outside; the leaves are opposite, two to each whorl; they have a strong disagreeable odor, and bitter taste.

An infusion of this plant is a common domestic medicine in fainting and disorders of the stomach. It is said to be peculiarly adapted to some constitutions affected with nervous and hysterical agitations; and that, if taken at bedtime, it procures refreshing sleep, when opium and laudanum have failed.

MUGWORT, OR COMMON WORMWOOD, *Artemisia Absinthium*—Grows two or three feet high, on roadsides and among rubbish; leaves deeply divided, pointed; on the upper side of a deep green, and on the under soft and downy; flowers small and purplish.

An infusion, a handful of the tops to a quart of boiling water, in doses of a teacupful, or a teaspoonful of the powdered leaves, three or four times a day, is an admirable stomachic in weakness of the stomach, lowness of spirits, and hysterical affections. It is also said to be a useful medicine in difficult menstruation, in intermittents, jaundice, and dropsical affections. Externally, it is applied in the form of fomentation and poultice, to resist putrefaction and relieve the pains of bruises, as well as prevent the swelling and discoloration of the part.

MULBERRY TREE, *Morus Nigra et Alba.*—Its fruit has the common quality of all other sweet fruits, quenching thirst, abating heat, and proving laxative in its effects.

A syrup made of the juice of the fruit serves as an excellent gargle for mitigating inflammations of the throat and ulcers of the mouth.

The bark of the root of the black mulberry tree, in doses of thirty grains, or half a teaspoonful of the powder, or double the quantity infused in a gill or half a pint of boiling water, or equal parts of a strong decoction and molasses, formed into a syrup, in doses of a wineglassful, is an excellent purgative, and has been used with success as a vermifuge, particularly for the tapeworm.

MULLEN, *Verbascum.*—The leaves, a handful to a quart of milk, are a common remedy in bowel complaints.

In the form of fomentation or poultice, it is employed to relieve the piles, and other painful swellings; and in a dry and pulverized state, to destroy fungous or proud flesh.

MUSTARD, BLACK AND WHITE, *Sinapis Nigra et Alba.*—Mustard used with our food provokes the appetite, assists digestion, and promotes the fluid secretions, and is especially adapted to persons of weak stomachs, or where much acid prevails, as it acts upon the system generally without producing much heat.

A tablespoonful of prepared mustard in a pint of warm water, on an empty stomach, operates as an emetic. A tablespoonful of the unbruised seed, taken twice or thrice a day, proves a gentle laxative, increases the urinary discharges, and is useful in chronic rheumatism, asthma, palsy, and dropsy.

In languid constitutions, or low stages of fevers, a gill of the seeds mixed with a small handful of horse-radish, and infused in a quart of wine, in doses of a wineglassful, occasionally, is a most cordial stimulant.

Another excellent form in which mustard may be taken is that of whey. It is prepared by boiling two or three tablespoonfuls of the seeds bruised, in half a pint of milk, and as much water, till the curd be perfectly separated, to which a little sugar may be added; and of this drink, a teacupful may be taken three or four times a day, in nervous fevers.

The powder of the seeds, mixed with crumbs of bread or flour, and formed into a poultice with sharp vinegar, is an excellent application to the parts affected with rheumatism, and to the soles of the feet and palms of the hands in fevers, where there is a languid circulation, or cold extremities, or in cases of delirium.

NIGHTSHADE, AMERICAN. See *Pokeweed.*

NIGHTSHADE, DEADLY, *Atropa Belladonna*—Grows two or three feet high, in hedges, among rubbish, and in uncultivated places; flowers dusky brown on the outside, and a dull purple within, appearing single among the leaves in

June or July; the berries round, green, changing to red, and, when ripe, of shining black. The whole of this plant is poisonous, and children, allured by its beautiful berries, have too often experienced their fatal effects.

Like all other strong poisons, in the hands of skill it performs wonderful cures in palsy, epilepsy, melancholy, jaundice, dropsy, and cancer. In the employment of this dangerous medicine, it is necessary to begin with very small doses. Half a grain of the powdered leaves or root, or two teaspoonfuls of the infusion, prepared by infusing twenty grains in half a pint of boiling water, and strained after cooling, is a sufficient dose for adults to commence with. The dose is to be gradually increased, and repeated daily; but as soon as any dangerous symptoms occur, its use ought to be suspended for some days, and afterwards resumed in smaller doses. Externally, the powdered leaves are applied to mitigate the pain in cancerous and other ill-conditioned ulcers, and the leaves, in the form of poultice, to discuss scirrhous and cancerous tumors.

The garden nightshade, growing also on dung-hills, with white flowers, odor of musk, and the berries, when ripe, of a shining black, possesses virtues similar to those of the deadly nightshade.

From one to three grains of dried leaves infused in boiling water, and taken at bed-time, will generally induce a copious perspiration, increase the discharge of urine, and operate as a mild laxative on the following day. If, after increasing the dose, some visible effect be not produced, its further use will not avail much. The dose is to be repeated every night, or every other night. In the form of poultice, it has abated the inflammation of the eyes, painful swellings, and inflammation of the venereal kind, and scrofulous and cancerous tumors.

The woody nightshade, called also *bitter-sweet*, because it is first sweet and then bitter, grows on the sides of ditches and in moist hedges, climbing upon the bushes with winding, woody, but brittle stalks. The flowers are in clusters, of a blue purple color, appear in June or July, and always turning against the sun. The berries are red.

This species is not so deleterious as the above two, and it acts more uniformly. Its sensible operation as a medicine is also by sweat, urine, and stool, and, in the form of infusion, is said to be eminently serviceable in acute rheumatism. It has also been found efficacious in jaundice, scurvy, obstructions of the menses, and in obstinate cutaneous disorders. An infusion is prepared by adding a pint of boiling water to an ounce or half a handful of the twigs or stalks, either in a fresh or dried state, of which a teacupful or more may be taken morning and evening. Another form is made by steeping four ounces of the twigs in a pint of wine, the dose a wineglassful. In the form of poultice or cataplasm it is also said to be a powerful discutient of hard tumors. For this purpose, boil two or three handfuls of the leaves in wine or vinegar, to which may be added a little flaxseed, and this to be applied warm to indurated or hard tumors. The application of the juice and leaves to cancerous sores is said, in some instances, to have performed a cure.

OAK, *Quercus*—The bark of the oak possesses, in a considerable degree, astringent, tonic, and antiseptic properties. Hence, we can never be at a loss for means in those diseases which call for a remedy possessing these properties; as diarrhœa from debility and relaxation, a weakening discharge from the vagina, etc. It also forms an excellent application for flabby and ill-conditioned sores and ulcers.

ONIONS, *Allium Cepa*—Possess similar virtues with the garlic, only in a less degree. The disagreeable smell which they impart to the breath may be effectually obviated by eating a few leaves of parsley immediately after the onions.

When well borne by the stomach, onions eaten raw have a most happy effect in many cases of nervous debility following acute diseases.

Roasted onions form one of the very best applications for sore throat, mumps, swelling from decayed teeth, earache, and local inflammations generally.

ORANGE TREE, *Citrus Aurantium*—Is now cultivated in the Southern States, and deservedly esteemed for its grateful acrid juice, which, by quenching thirst and diminishing heat, is of considerable use in febrile disorders. From

its virtues to resist putrescency, it has always, and most deservedly, held the first place on the list of antiscorbutics.

PEACH TREE, *Amygdalus Persica.*—Both the flowers and leaves are excellent cathartics, and ought to be preserved by every family. A teaspoonful of a strong infusion, sweetened, and taken every hour or two, will operate mildly on the bowels, without griping, as senna does. Of the syrup, prepared by boiling slowly the juice of the leaves with nearly an equal quantity of molasses, honey, or sugar, a teaspoonful to children, and a wineglassful to adults, will also prove a mild laxative medicine.

But peach leaves are not only laxative; they also possess considerable anodyne properties, and perhaps some other property beside these, by which they control inflammation and irritation of the bowels in dysentery. See Comp. Peach-leaf Syrup, under the head of Dysentery.

A decoction, prepared by boiling a handful of the dried leaves in a quart of water to a pint and a half, and taken in doses of a teacupful every two or three hours, is reputed to have proved an effectual remedy in gravel and voiding blood by urine, which had resisted the usual remedies.

PENNYROYAL, *Mentha Pulegium.*—An infusion, a handful to a quart of boiling water, the dose a teacupful three times a day, has long been esteemed in hysteric complaints and obstructions of the menses.

PEPPERMINT, *Mentha Piperita*—Is an excellent stomachic in flatulent colics, hysteric cases, and vomiting. The usual modes of administering it are infusion, the distilled water, and the essential oil. The last, united with rectified spirits of wine, forms the essence of peppermint, so highly esteemed.

In nausea, cholera morbus, obstinate vomiting, and griping, peppermint, infused in spirits, and applied, as hot as can be endured, to the stomach and bowels, will be a most valuable remedy.

PEPPER, RED, OR CAYENNE, *Capsicum Annum*—Is cultivated in our gardens; it is a powerful stimulant, and has been found beneficial in chronic rheumatism. Those who are subject to flatulence will find benefit in using it

with vegetables and soup. In case of violent pain or cramp in the stomach, no medicine is superior to a strong infusion of red pepper, one or two pods to a half pint of spirits, in doses of from a half to a wineglassful. It is also useful, both as a medicine and gargle, in putrid sore throat, when infused in water. Steeped in spirits, applied warm to the extremities in chronic rheumatism, or low stages of nervous fever, when the circulation is languid, it has produced the most happy effects.

No other remedy has acted so well in my practice, for allaying a tickling, harassing cough, whether from cold or asthma, as a weak infusion of red pepper in cold water. Most persons make it too strong, and then it is apt to occasion dryness; but taken weak, and especially when sweetened with honey, it creates moisture and aids expectoration, and wonderfully soothes the irritation which keeps up the cough.

PINK ROOT, CAROLINA, *Spigelia Marylandica*—Grows abundantly in the Southern States, and is deservedly esteemed a *vermifuge*, or destroyer of worms. An infusion, a handful to a quart of boiling water, and one or two teacupfuls night and morning, is the usual form and dose. With the addition of milk and sugar, children will take it almost as readily as their tea. It sometimes occasions disagreeable affections of the eyes; when this occurs, suspend the use of the medicine until these symptoms disappear, and then select from another parcel, or make tea of the tops only, as it is supposed the deleterious effects are in consequence of some other root being attached to it.

Pink root is always considered a valuable medicine in fevers, as is verified daily, when given to children in a febrile state for a vermifuge, when no other effect has been produced than a removal of the fever.

PLANTAIN, *Plantago*—Has long been employed as an antidote against the bites of snakes, of spiders, and other venomous insects. The juice, when extracted from the whole of the plant, is generally given in doses of two tablespoonfuls every hour, or oftener, until the patient is relieved. It is sometimes given in conjunction with horehound or rue.

The leaves, bruised, are considered by some a good application to fresh wounds.

PLEURISY ROOT, *Asclepias Decumbens*—Has a variety of names, as butterfly weed, flux root, decumbent swallow-wort. It is a beautiful plant, growing two or three feet high, under fences and upland pastures. The flowers are of a bright orange color, and appear in July and August. These are succeeded by long slender pods, containing the seed, which have a delicate kind of seed attached to them. The root is spindle or carrot-shaped, of a light brownish color on the outside, white within.

This plant possesses great medicinal virtues, and ought, therefore, to be cultivated in our gardens. It has long been employed as a remedy in the treatment of violent cold and pleurisies. No medicine is better calculated than this to produce general and plentiful perspiration without heating the body, and hence its well-merited fame in curing the disease whose name it bears.

It is usually given in infusion, a handful to a quart of boiling water, and a teacupful given every hour or two.

POISON OAK, *Rhus Toxicodendron*—Embraces several species, the most dangerous of which is the swamp sumach. The poison may be communicated, not only by the touch, but also by the smoke, smell, or steam, producing an eruption on the skin, with pain and itching, and sometimes attended with swollen head and fever. The best remedies which have come under my notice are, lime water externally, and salts internally.

POKE WEED, *Phytolacca Decandra*—Is known by a variety of names, as American nightshade, coacum, garget, skoke. The berries, steeped in spirits, have long been employed in chronic rheumatism. It has, however, sometimes failed, which may have been owing to peculiarity of constitution, or to the inertness of the bounce or tincture from age, an effect often observed by Professor Barton. From the authority of this learned professor, the juice of the ripe berries, inspissated to the state of an extract, and spread upon a rag, or upon a leaf of the plant, is an excellent application to scrofulous or indolent tumors. The juice of the

CAMOMILE. (*Anthemis.*)

POKE WEED. (*Phytolacca decandra.*)

leaves has been applied in the same manner, with equal advantage. An ointment of the leaves, with lard, is good in various kinds of ulcers. The roots, bruised, are sometimes applied to the hands and feet of the patients in fevers.

To make an extract, expose to moderate and continued heat the juice of the berries or leaves, until, by evaporation, it thickens to the consistency of honey. It may also be made from the root, which is equally efficacious. Boil the roots for some time, strain the decoction, and then reboil it to a thick consistency.

An infusion of the leaves is recommended externally as an admirable remedy for the piles.

The usual form of exhibition is the bounce, a wineglassful three times a day. The bounce is prepared by filling a jug with the whole berries when ripe, and then pouring as much spirits on them as the vessel will contain.

An ointment, prepared by simmering slowly the leaves, or a handful of the root scraped in a pint of hog's lard, with a small portion of beeswax, has been used with reputed success in cancers, and various kinds of ulcers.

POMEGRANATE, *Punica*—Is cultivated in the Southern gardens. The fruit is agreeable to the palate, and possesses the properties of subacid fruits. Its rind, boiled in milk, and drunk freely, or in powder, a teaspoonful three times a day, has been used with success in diarrhœas, dysenteries, and other diseases requiring astringent medicines. The flowers possess the virtues of the rind, only in a less degree.

POPLAR TREE, OR WHITE WOOD, *Liriodendrum Tulipifera*.—The bark of this noble tree, as well as the root, is an aromatic bitter.

In intermittents, in the last stage of dysentery, and other disorders requiring tonic medicines, it is considered but little inferior to the Peruvian bark, and is generally employed in similar doses and forms.

There is another species of poplar, the aspen tree, *populus tremula*, the bark of which, according to Professor Barton, is also an excellent tonic and stomachic.

POPPY, WHITE, *Papaver Somniferum*—Grows in our gardens, and yields a juice which, when inspissated to a proper consistence, is called opium.

Poppy heads are used externally in fomentations and poultices, either alone or conjoined with the leaves of Southern wood, camomile flowers, or other ingredients.

POTATO, SWEET, *Convolvulus Batatas*.—From this root Bowen's patent sago is prepared, which forms a very nutritious jelly, like arrow-root, and is prepared in the same manner, to which the reader is referred.

The process generally used for procuring the powder of the sweet potato is to grate the clean roots, wash the mass through brass sieves of different sizes, and collect the flour at the bottom of the vessel which receives the fluid; finally, dry it in pans either by the fire or in the sun.

POTATO, WILD, *Convolvulus Panduratus*—Grows in low grounds and sandy soils, near running water. It trails along the ground several feet, much like a grape vine, the root very large, hard, and white, running deep in the earth; the leaves triangular, the flowers whitish, with a purple tinge, and bell-shaped. It is called wild rhubarb, and is employed as a purgative in doses from a tea to a tablespoonful of the powdered root. Professor Barton says that the root, in powder or decoction, has been much recommended in Virginia, and other parts of the United States, in cases of gravel. The decoction is prepared by boiling slowly a handful of the root, sliced or bruised, in three pints of water to a quart, of which, in gravel complaints, a teacupful may be taken four or five times a day. Boiled in sweet milk, it has the reputation of curing dysentery.

PRICKLY ASH, AND PRICKLY YELLOW WOOD, *Zanthoxylum*—Possesses the same virtues. Both species are covered with numerous prickles, whence the name. Both the bark and berry are of a hot acrid taste, and, when chewed, powerfully promote spittle. It is used in this way to cure the toothache; also to cure the palsy of the tongue.

The prickly ash has a great deal of reputation as a remedy in chronic rheumatism. In that disease its opera-

tion seems nearly analogous to that of Mezereon and Guaiacum, which it nearly resembles in its sensible properties. It is most frequently given in decoction; an ounce being boiled in about a quart of water.

A tincture prepared by steeping half a pint of the berries, or a handful of the bark, in a bottle of spirits, is much esteemed as a remedy in flatulent colic. It is sometimes employed in this form, in cold phlegmatic habits, afflicted with rheumatism.

PRIDE OF INDIA OR CHINA, *Melia Azedarach*—Is now completely naturalized to the Southern States. Independently of its luxuriant verdure and cooling shade, it is highly valuable for its medicinal properties, being now ascertained to be one of the best vermifuges.

Many physicians in the Southern States have witnessed its remarkable effects in destroying and dislodging worms. It has even been found a remedy against the tape-worm.

The common modes of using this medicine are the infusion or tea, and saturated decoction. Of the former, a handful of the bark to a quart of boiling water is given in doses of a small teacupful morning and night. The decoction is made by boiling a large handful of the fresh bark of the root in three pints of water to a quart, which is given to children in doses from a half to a whole wineglassful. Dr. Kollock, of Savannah, observes, when exhibited in the latter form, every three hours, until it operates, he has found it beneficial as a febrifuge in those affections usually denominated worm fevers, but where no worms are voided. The pulp which invests the stone of the fruit, pounded with tallow, has been successfully employed in cases of scald-head.

PUCCOON. See *Blood Root.*

QUEEN OF THE MEADOWS—Grows in hedges, and on the sides of meadows, about four feet high; in very rich bottoms, however, it grows much higher than this; the stalk reddish, leaves long, spear-shaped, and opposite each other, flowers purple.

A large handful of the roots boiled in three pints of water to a quart, and given in doses of a teacupful every two hours, is said to be an excellent remedy in suppression

of urine, and for carrying off the water in dropsy. An infusion of the leaves or stalk forms an admirably pleasant cooling drink in fevers, and excites perspiration.

RASPBERRY, *Idaus*—Like the rest of the rich sub-acid fruit, when ripe, the raspberry is wholesome and nourishing. Raspberries, as well as strawberries, held in the mouth, will dissolve tartarous concretions formed on the teeth.

RED CEDAR, *Juniperus Virginiana*—Is found from Lake Champlain to the Cape of Florida. The leaves have a strong disagreeable taste, with some pungency and bitterness. Its most frequent use is in the composition of the cerate employed for keeping up the irritation and discharge of blisters. This preparation is the same with the savin cerate used in Europe, the leaves of the red cedar being substituted for the savin. When properly prepared by boiling the fresh leaves for a short time in about twice their weight of lard, with the addition of a little wax, a cerate is formed, of peculiar efficacy as a perpetual epispastic. When applied as a dressing to a new vesicated surface, and afterwards repeated twice a day, it rarely fails to keep up the discharge for an indefinite length of time. Under its operation, the discharge usually changes from a serous to a puriform appearance, and concretes upon the surface; so that it requires to be removed from time to time, to admit the full action of the cerate.

Internally, the leaves have been found to exert effects very similar to those of the savin. They have proved useful as an emmenagogue, and as a general stimulant and diaphoretic in rheumatism. They have also had some reputation as a diuretic in dropsy.

ROSE, *Rosa*.—The hundred-leaved, or damask rose, is justly termed the queen of flowers. Otto or essence of roses is obtained from these by distillation, and is doubtless the most elegant perfume in vegetable nature. Independently of their use in this manner, a decoction of its leaves will be found a mild laxative, and, when formed into a syrup, may be given with advantage to children. The conserve of roses is also prepared from them for medicinal purposes.

RUE, *Ruta*—Has an ungrateful smell, and a pungent bitter taste. The leaves are acrid, and when applied to the skin are apt to produce blisters. Employed in the form of tea, they are reputed to be of great service to persons of cold phlegmatic habits. According to Boerhaave, an infusion of the leaves powerfully promotes perspiration, quickens the circulation, removes obstructions, and is particularly adapted to weak and hysterical constitutions, suffering from retarded or obstructed secretions.

SAGE, *Salvia*.—An infusion of the leaves, or tea, is considered serviceable to persons of cold phlegmatic habits laboring under nervous debility. Sweetened with the addition of a little lemon juice, it forms an exceedingly grateful and useful drink in febrile disorders.

SARSAPARILLA, *Smilax Sarsaparilla* — Grows in several parts of the United States. It is a small vine resembling a bramble.

A decoction of sarsaparilla, prepared by boiling a large handful of the root in a quart of water till the third part be evaporated, has long been employed as an auxiliary to mercury in the treatment of venereal complaints. It promotes perspiration, attenuates viscid humors, relieves venereal headache, nocturnal pains, and disposes venereal ulcers to heal. In rheumatic affections, cutaneous disorders, and scrofula, it is a very useful medicine. It may also be exhibited in the form of powder in doses of two drachms, or extract in doses of one drachm, three or four times a day.

SASSAFRAS, *Laurus Sassafras*.—An infusion or tea of the flowers or bark of the root has often been successfully given as a sweetener or purifier of the blood, in scorbutic, venereal, and cutaneous disorders, or where an acrimony of the fluids prevails. Conjoined with bark of dogwood, cherry tree, or oak, it is very useful in obstinate intermittents. The oil externally applied in chronic rheumatism, and also in wens, has oftentimes proved salutary. The pith of the small twigs, in water, forms a mucilage of excellent use for sore eyes, and as an injection in the incipient stage of gonorrhœa. It also affords, when sweetened, with the

addition of nutmeg, a palatable jelly, useful in dysentery and febrile diseases. But besides these properties, which are about all that are enumerated in standard works, the sassafras, as the reader who has perused this work already knows, possesses other and more valuable curative powers, which have placed it, in the author's estimation, in the first class of remedies. It does not appear to act especially upon any of the organs of secretion, but it gently stimulates all into increased healthy action; it probably does this by promoting a more vigorous nervous influence. It is also a good blood-purifier; is anti-narcotic—that is, it controls or modifies the action of narcotic vegetable substances, so as to prevent their unpleasant effects, especially of tobacco and hyoscyamus; it is also exceedingly destructive to insect life; and housewives will be glad to learn that the oil applied to the joints of a bedstead will effectually clear it of chinches or bed-bugs; applied in this way every month or two, it will keep them off, though the walls of the tenement may be ever so badly infested with them.

SCURVY GRASS, *Cochlearia Officinalis*—Is a pungent, stimulating plant, and in the simple state of a salad, or in the form of expressed juice, a wineglassful three times a day, has long been esteemed one of the best of all the anti-scorbutic plants.

SENEKA SNAKE ROOT, *Polygala Senega*—Grows nearly a foot high, the leaves pointed, and somewhat oval; the stalks upright and branched, the flowers white, the root variously bent and jointed, and supposed to resemble the tail of the animal whose name it bears.

In violent colds, croup, pleurisy, acute rheumatism, and all inflammatory complaints, I can recommend it as an admirable medicine to promote perspiration. The best form of using it is in decoction, a handful to a quart of water, a wineglassful to adults every two or three hours, increasing or lessening the quantity to avoid vomiting and purging.

Professor Chapman recommends it very highly in obstructions of the menses; four ounces of the decoction to be taken in the course of the day, increasing the quantity when the menstrual effort is expected, as far as the stomach will

BLACK SNAKEROOT.
(*Aristolochia Serpentaria.*)

SENECA SNAKEROOT.
(*Polygala Senega.*)

DEADLY NIGHTSHADE. (*Atropa Belladonna.*)

allow. If this excite nausea, aromatics are to be added, as cinnamon, calimus, and angelica.

Dr. Archer, of Harford county, Maryland, was among the first who noticed the efficacy of this medicine in cases of croup or hives.

He directs a teaspoonful of the strong decoction to be given to a child every hour or half hour, as the urgency of the symptoms may demand, and, during the intervals, a few drops occasionally, until it acts as an emetic or cathartic; then repeat in small quantities, to keep up a constant stimulus in the mouth and throat. Patients who use this medicine should not be permitted to drink any thing whatever for some time after each dose. He employed it in the form of powder in doses of four or five grains, mixed with a little water.

In various forms of dropsy, the seneka root has been resorted to with advantage, and has received the commendations of Percival, Millman, and some others. Its cathartic and diuretic effects are very considerable, when persevered in, in large quantities; and have, in many instances, effected the dissipation of dropsical swellings. In epidemic influenza, a decoction of this vegetable, taken freely at the commencement of the disease, is a medicine of great utility.

SENNA, AMERICAN, *Cassia Marylandica*—Is easily cultivated from the seeds, and ought to be more generally introduced into our gardens.

It has long been employed as a purgative. To increase its effects on the bowels, manna, salts, or tamarinds, are generally added. To correct its ill flavor, and prevent griping, it should be joined with some aromatics, as coriander or fennel seed, ginger, etc. In the form of decoction, a handful to a pint of boiling water, the dose is a teacupful every hour or two until it operates. It may also be exhibited in the form of tincture, to relieve flatulent colics, four ounces of senna to a quart of spirits, with an ounce of coriander seed, or ginger, and a wineglassful the dose.

SORREL, *Oxalis Acetosella*—Called also sour trefoil, or cuckoo bread; yields, on expression, a grateful acid juice,

which has been beneficially used in the scurvy and scorbutic eruptions. An infusion of the leaves makes a palatable diet drink in fevers, and, on being boiled in milk, forms an agreeable whey. A conserve made of the leaves, with double their weight of loaf sugar, forms an excellent substitute for lemons, and may be given with advantage in all putrid and other fevers where antiseptics are indicated. The leaves bruised, and externally applied to scrofulous ulcers, have produced excellent effects by promoting suppuration and granulation.

SOUTH-SEA TEA, OR YAUPON, *Alex Vomotoria*—Grows abundantly in the Southern States. It rises about twelve feet high, shooting into many upright, slender, stiff branches, covered with whitish smooth bark; the leaves small, evergreen, and saw-edged; the flowers small and white, and grow promiscuously among the leaves, succeeded by small berries, which become red in October, and remain so all the winter.

It is held in great esteem among the Southern Indians. They toast the leaves and make a decoction of them, which is called black-drink.

An infusion or tea of the leaves is considered as palatable as Bohea tea, and when used freely is a powerful diuretic, and hence of service in the cure of dropsy and suppression of urine.

SUMACH, COMMON, *Rhus Copallinum*.—The berries or seeds, when ripe, are red and very acid. An infusion of them, sweetened with honey, is a good gargle for the sore throat, and for cleansing the mouth in putrid fevers.

As a poultice, it is valuable for cleansing foul ulcers. It also has considerable reputation as a diet drink in scrofulous and syphilitic diseases. It is said that the juice of the berries will dissolve calculi.

TANSY, *Tanacetum Vulgare*.—This plant possesses a warm, bitter taste, and may be used as a substitute for hops. An infusion of the leaves is recommended for a weak stomach, hysteric complaints, and obstructed menses.

According to Dr. Withering, its seeds are an excellent

vermifuge, in doses from a scruple to a drachm, and, if animal substance be rubbed with the herb, it will be effectually preserved from the flesh fly.

THORN APPLE, *Datura Stramonium*—Has a variety of names, as Jamestown or Jimson weed, French apple, Stink weed, etc. Its common name, Jamestown weed, is said to have arisen from the circumstance of a number of sailors being violently diseased by ignorantly eating the boiled plant at Jamestown, in Virginia, at its first settlement. It grows among rubbish and on dung-hills, to the height of two or three feet; flowers in July and August. The corolla is funnel-shaped, and plated white, with a tinge of purple. The capsule is large, egg-shaped, and covered with thorns, which have four divisions, and contain numerous kidney-shaped seeds. The leaves are large, egg-shaped, and deeply indented, of a disagreeable smell and nauseous taste.

Every part of this plant is a strong narcotic poison. Nevertheless, when judiciously administered, it is unquestionably one of the most valuable medicines in our possession. Professor Barton considers it a medicine of great and invaluable powers, especially in cases of mania, attended with little or no fever, or with a cold skin and languid circulation. The form in which he exhibited it was of an extract prepared from the fresh leaves, beginning with a few grains, and gradually increasing the dose to fifteen or twenty grains.

The extract may be made by exposing the juice of the plant to the heat of the sun, or by boiling the bruised seed or leaves in water for the space of four hours; then strain off the liquor, evaporate over a gentle fire, without taking off the scum, until it has acquired the thickness of syrup; then place it in a warm oven, in an earthen vessel, until it becomes of a proper consistence for use. The dose is from one to two grains, or more, for an adult. The saturated tincture is prepared by steeping one or two handfuls of the leaves in a half pint of spirits for a few days.

The stramonium has also been employed externally with the most happy effects. In recent wounds, inflammations, or bruises, the leaves, either alone or united with bread

and milk poultice, have been applied to the part with manifest advantage. In the form of ointment, which is prepared by simmering slowly the fresh leaves bruised in hog's lard, with about one-eighth part of beeswax, for an hour, and then strained through a coarse cloth, it will be found excellent for the piles, scalds, and burns. From my own observation, it far excels all other applications I have made to obstinate cutaneous sores, ill-conditioned ulcers, and painful cancerous affections.

THOROUGHWORT, *Eupatorium Perfoliatum*—Is known also by the following names: thoroughstem, crosswort, boneset, and Indian sage. The first of these names, thoroughstem, has been imposed upon it from the peculiar structure of the leaves, which are opposite, and appear as though the stem were thrust through them. It has received the second name, of crosswort, by which it is known in many parts of Virginia, from the position of the leaves, each pair of which take their organ from opposite sides of the stem, so that they *cross* each other nearly at right-angles. I am at a loss, says Professor Barton, to refer the word *boneset* to its real origin; but I presume the plant received this name from the great relief which, on many occasions, it has been found to afford to persons laboring under violent remitting and other fevers in which the bones are greatly pained. The resemblance of the leaves of this plant to those of the common sage was long ago remarked by the botanists. Hence the name Indian sage, by which the eupatorium is known in some parts of Pennsylvania.

This plant flourishes in wet meadows and other moist places. The stalk is hairy, and rises from two to four feet. The flowers are white, and appear in July and August. The leaves at each joint are horizontal, saw-edged, and rough, from three to four inches long, and about two inches broad at the base, gradually lessening to a very acute point, of a dark green, and covered with short hairs.

This plant possesses very active powers, and has been exhibited with uncommon advantage in intermittents, remittents, and other diseases of debility. When exhibited in the form of a warm decoction, a handful of the herb boiled

BONESET. (*Eupatorium perfoliatum.*)

THORN APPLE. (*Datura Stramonium.*)

in a quart of water, a wineglassful every two hours, has proved *peculiarly beneficial*, says Professor Barton, in fevers, by exciting a copious perspiration. In larger doses, it proves emetic, with which view it is used in some parts of the United States as an excellent remedy in intermittents. The dried leaves in powder, in doses of twelve to fifteen grains, are said to operate gently on the bowels. Every part of this plant may be advantageously employed in practice. The flowers, as a tonic bitter, are deemed equal to the flowers of camomile, for which they might be substituted on many occasions.

THYME, GARDEN, *Thymus Vulgaris*—Is one of the most powerful aromatic plants, and, as such, is frequently employed in the form of tea in those complaints where the medicines of this class are indicated.

TOBACCO, *Nicotiana Tobacum*.—This "obnoxious luxury" is a medicine of the most uncommon powers, being emetic, cathartic, sudorific, diuretic, expectorant, narcotic, and anti-spasmodic; hence its utility in a variety of diseases.

Happy if this plant "of many virtues" could always be devoted to beneficent purposes, for which, no doubt, it was intended by the all-wise and benevolent Creator. But alas! we are constrained to deplore not only the idle and expensive, but too often fatal abuse of it, by snuffing, chewing, and smoking practices, which cannot be too severely censured, especially in young persons, and those of weak digestion, consumptive or delicate habits. When used in either of these forms, by persons unaccustomed to its use, it will, in small quantities, produce stupor, giddiness, and vomiting; but, like spirits, opium, and other narcotics, the use of it may be introduced by degrees, so that its peculiar effects, even from large quantities employed, seldom appear.

VALERIAN, WILD, *Valeriana Officinalis*—Grows abundantly in the vicinity of the Ohio river. It rises two or three feet high; the leaves in pairs, large, hairy, and of a dusky green color; flowers stand in large tufts on the top of the branches, of a pale whitish-red color.

The root, which is the part used in medicine, consists of a number of slender fibres, matted together, and attached to one head, of a brown color, having a strong and unpleasant smell. Valeria has long been recommended as a medicine of great use in nervous disorders, and is particularly serviceable in hysteric cases, as well as in epilepsy, proceeding from a debility of the nervous system. According to Dr. Withering, it is an excellent medicine in cases of habitual costiveness. It should be given in doses from one to two teacupfuls or more, or in powder, three times a day. It seems most useful when given in substance, and in large doses.

VIRGINIA, OR BLACK SNAKE ROOT, *Serpentaria Virginiana*—Grows in rich woodlands, from seven to nine inches high, leaves heart-shaped, flowers of purplish brown color. The root is composed of a number of strings, or fibres, issuing from one head, and matted together, of a brownish color on the outside, and pale or yellowish within.

It has an aromatic smell, and a warm, bitterish, pungent taste. It promotes perspiration, raises the pulse, and resists putrefaction. Hence, it is especially adapted to the low and advanced stage of typhus or nervous fever. It may be given in the form of infusion or tea, a handful to a quart of boiling water, in doses of a teacupful; or in powder, from ten to thirty grains every two or three hours. Conjoined with the Peruvian bark, or any of its substitutes, it is an admirable remedy in obstinate cases of the ague and fever, and other disorders of general weakness. In cold phlegmatic habits, it has also been exhibited in the form of tincture, and when united with double the quantity of dogwood bark, or berries, it affords a good bitter. Professor Barton observes, that a strong decoction of the root was used with great benefit as a gargle in a putrid sore throat which prevailed in New Jersey.

WALNUT, WHITE, OR BUTTERNUT—Affords one of the finest cathartic medicines in the whole American Materia Medica. The inner bark, boiled for several hours, then strained and re-boiled to the consistence of thick honey, forms the best preparation of this invaluable medicine. A

common-sized pill or two at going to bed is admirable to remove those costive habits which occasion headaches, loaded stomachs, colics, etc. And in increased doses, say double quantities, it will be found a sovereign medicine in dysentery, bilious fever, and all other complaints requiring aperient medicines, more especially if combined with equal quantities of calomel.

WILLOW, *Salix.*—Professor Barton thinks that our willows possess nearly the same virtues that have been ascribed to those of Europe, and that they might be substituted for the Peruvian bark. The bark of the white willow, smooth willow, and crack willow—so called from the remarkable brittleness of its branches—collected when it abounds with sap, has been successfully employed in intermittent or ague and fever, in doses of one or two drachms. The broad-leaved willow is said to possess greater virtues than either of the above. This species may be distinguished by the shape of its leaves from all others except the bay-leafed willow. The leaves of the latter are smooth and shining, of a deeper green, and have not the downy appearance on the under surface which is so remarkable in this. It is found in woods and hedges, on hilly situations, and delights in cold, clayey, moist grounds.

A strong decoction of this bark resembles port wine in color. It is astringent to the taste, and somewhat bitter. According to Dr. Wilkinson, it is a remedy of great efficacy in most cases where the Peruvian bark is indicated. He directs one ounce and a half (a handful) of the bark to be infused in one quart of water for six hours, then boil it over a gentle fire for a quarter of an hour, and strain for use. Of this, the ordinary dose is a wineglassful three or four times a day. But in ague and fever, the dose may be repeated every third hour in the interval of the fit.

YARROW—Grows in dry pastures and along the sides of fences, about a foot high; leaves pointed; flowers white, tinged with a little purple beneath.

A handful of the tops of yarrow, infused in a quart of boiling water, in doses of a teacupful three or four times a day, is reputed to be a valuable medicine in dysentery,

bleeding piles, and in restraining immoderate flow of the menses.

DIRECTIONS

RESPECTING THE COLLECTION AND PRESERVATION OF VEGETABLE SUBSTANCES.

Herbs and leaves are to be gathered in dry weather, after the dew is off, and are to be freed from decayed, withered, or foreign leaves. They are usually tied in bundles, and hung up in a shady, warm, and airy place, or spread upon the floor and frequently turned. If very juicy, they are laid upon a sieve, and dried by a gentle degree of artificial warmth. They should be dried in such quantities at a time that the process may be finished as quickly as possible; for by these means their powers are best preserved—the test of which is the perfect preservation of their natural color.

Flowers ought also to be collected in clear, dry weather, after the dew is off, immediately after they have opened. They should also be dried nearly as leaves, but more quickly, and with more attention. As they must not be exposed to the sun, it is best done by a slight degree of artificial warmth.

Barks and woods should be collected when the most active part of the vegetables are concentrated in them, which happens in spring and in autumn. Spring is preferred for resinous barks, and autumn for those that are gummy. Barks should be taken from young trees, and freed from decayed parts and all impurities.

Seeds and fruits should be gathered when ripe, but before they fall spontaneously.

Roots which are annual should be collected before they shoot out their stalks or flowers. Those which are worm-eaten or decayed are to be rejected. The others are immediately to be cleaned with a brush and cold water, letting them lie in it as short a time as possible; and the fibres and

little roots, when not essential, are to be cut away. Roots which consist principally of fibres, and have but a small top, may be immediately dried. If they are juicy, and not aromatic, this may be done by a moderate heat; but if aromatic, by simply exposing them, and frequently turning them in a current of cold, dry air. If very thick and strong, they are to be split or cut into slices, and strung upon threads; if covered with a tough bark, they may be peeled fresh, and then dried. Such as lose their virtues by drying, or are directed to be preserved in a fresh state, are to be kept buried in dry sand.

The proper drying of vegetable substances is of the greatest importance. It is often directed to be done in the shade, and slowly, that the volatile and active particles may not be dissipated by too great heat; but this is an error, for they always lose infinitely more by slow than by quick drying. When, on account of the color, they cannot be exposed to the sun, and the warmth of the atmosphere is insufficient, they should be dried by an artificial warmth, less than one hundred degrees of Fahrenheit, and well exposed to a current of air. When perfectly dry and friable, they have little smell; but after being kept some time, they attract moisture from the air, and regain their proper odor.

FORMULAS OR RECIPES.

In this chapter will be given all the important medicinal compounds which have been prescribed in this work. They are not very numerous—the author having, through all his professional life, been rather partial to simple remedies, and to giving one thing at a time; for then he could anticipate with more certainty the precise result, and be better able to decide when to change the remedy, or to call to its aid something else which might enable it to succeed. But still, in the course of his experience he has been led to adopt certain combinations in which the separate properties of each article very happily come to the support of each of the others, so as to give a power over diseased action to the compound which is not possessed by any of its constituents. Now as the elements of disease are few, as has been before said in this work, these compound remedies may be made available in a great number of different cases of disease, and have therefore been repeatedly prescribed in preference to introducing others, which, if equally applicable, would at least serve to embarrass the common reader, and make it more troublesome and expensive to furnish himself with the necessary articles. But still, as the object to be accomplished in the treatment of the various diseases has been as plainly set forth as was possible, it will not be difficult for any person to devise such combinations of medicines as will meet the indications. The knowledge of the virtues of remedies is generally easily obtained, but the knowledge of the nature of disease has always been the great difficulty,

and just in proportion as the author has succeeded in enabling the reader to understand disease, ought the value of his work to be estimated.

COMPOUND SYRUP OF VALERIAN, OR FEVER SYRUP.

Syrup of rhubarb, four ounces; tincture of valerian, two ounces; oil of sassafras, twenty drops; piperin, ten grains; super-carbonate of soda, twenty grains. Mix.

A point to be observed is that the oil of sassafras and piperin must be thoroughly mixed with the syrup before the tincture of valerian is added, otherwise the compound will be too pungent. For the manner of making the fever syrup upon a larger scale, see page 53. This compound will answer in more cases of sickness than any other I have ever known; very many families keep it and use it on every occasion when one of the members is out of health. But this is wrong, for the system after a while will become so accustomed to it as to destroy its usefulness in a great measure; it should only, therefore, be given when there is some real necessity. The dose is from a teaspoonful to a tablespoonful, to be taken after each meal in derangements of the stomach, etc., and every two or three hours in fevers. It is best to give it in sweet milk, especially to children.

CHLOROFORM LINIMENT.

Sweet spirits of nitre, four ounces; spirits of hartshorn, or aqua ammonia, one ounce; chloroform, one ounce; gum camphor, oil of sassafras, oil of juniper, each half an ounce. Mix.

The chloroform liniment possesses great power in relieving pain; it may therefore be used in any case of suffering. It also will destroy the poison of the bite or sting of insects, and will subdue almost every kind of irritation upon the surface. See page 54.

ANODYNE ALTERANT, OR COMPOUND SYRUP OF BUTTERNUT.

Extract of hyoscyamus, one ounce; extract of butternut,

seven ounces; oil of sassafras, half an ounce; super-carbonate of soda, two ounces; simple syrup, two quarts. Mix. See pages 449 and 871.

This compound is also capable of very extensive application, it being suited to all cases in which there is a necessity for allaying nervous irritation, gently opening the bowels, and improving digestion; it may be given in nearly all the nameless ills attendant on pregnancy, and for most of the ills of infancy. As it possesses many of the properties of the fever syrup, it may often be given in its stead. By adding thirty grains of piperin to the above formula, it comes still nearer to the fever syrup, and will oftener agree with the stomach. Dose from a teaspoonful to a tablespoonful three times a day, or oftener if required.

EMULGENT PILLS.

Calomel, compound extract of colocynth, and castile soap, each thirty grains; make eighteen pills. Dose from three to five. See page 279.

TONIC SYRUP FOR IMPROVING THE BLOOD.

Take of elecampane root, four ounces; water, one quart; simmer for two hours, strain, and then simmer down to half a pint; add one pound of coarse brown sugar while the infusion is hot; after it has cooled, add one ounce of burnt copperas, (sulphate of iron,) well pulverized and sifted. Mix thoroughly, and shake the bottle well before using each time. Dose, a teaspoonful after each meal. See pages 352, 353.

This is a most valuable medicine in all cases of debility attended with an impoverished state of the blood, as in chlorosis, low stages of dropsies, etc.

ALTERATIVE SYRUP FOR SCROFULA.

Fluid extract of sarsaparilla, six ounces; tincture of valerian, two ounces; syrup of rhubarb, two ounces; piperin, thirty grains; iodide of potassium, six drachms. Mix. Dose, a teaspoonful after each meal for a child, to be taken in sweet milk. See page 352.

Another:

Wild cherry bark, elecampane root, and burdock root, each one ounce; good spirits, one quart. Let it stand forty-eight hours; then strain and add one pound of coarse-grained cane sugar, and heat until it dissolves. Dose, a tablespoonful for a child two or three years old. See page 352.

ANODYNE CARMINATIVE.

Good French brandy, half a pint; pulverized cinnamon bark and nutmeg, each two drachms; piperin, ten grains; loaf sugar, a fourth of a pound. Dose, one or two teaspoonfuls in four times its volume of milk three times a day, or oftener if required. See page 192.

In case of irritable bowels, attended with green or foamy discharges, half an ounce of prepared chalk may be added with advantage to the above formula.

LITHONTRIPTIC—FOR DISSOLVING STONE AND GRAVEL.

Fill a vessel with white sumach berries; then pour on as much good apple vinegar as it will contain. Let it stand twenty-four hours, and then strain; and to every quart add half an ounce of sulphuric acid. Dose, an ounce three times a day. See page 662.

There is a poisonous variety of sumach which grows much larger, whose stems are thickly covered with fur, and bears a dark berry.

REMEDY FOR LEUCORRHŒA, OR WHITES.

Balsam copaiva, half an ounce; sweet spirits of nitre, two ounces; compound spirit of lavender, half an ounce; simple syrup, three ounces. Mix. Dose, a teaspoonful from three to five times a day. See page 854.

EMULGENT AND TONIC PILLS.

Sulphate of quinine, thirty grains; blue-mass, twenty grains; piperin, ten grains; oil of sassafras, ten drops. Make fifteen pills. Dose, one every two hours to break

chills, and one three times a day as an alterant and tonic. See page 277.

ANTI-SYPHILITIC SYRUP.

Compound syrup of valerian, or fever syrup, and compound syrup of sarsaparilla, each eight ounces; iodide of potassium, one ounce; bichloride of mercury, or corrosive sublimate, thirty grains. Dose, a tablespoonful after each meal. See page 401.

PREPARATIONS OF SLIPPERY-ELM.

I have no intention of writing a history of the slippery-elm, but merely to refer to some new preparations of it which I have lately made, which I think are both convenient and useful, explaining the mode of their preparation, uses, etc.

Of the medicinal properties of the slippery-elm I need say nothing—they are known to the profession, and to the people; it is simply a cooling demulcent, and has been used from time immemorial as a soothing external application to inflammations, and as a cooling drink in internal irritations, etc. The value of the slippery-elm poultice to inflamed surfaces is well understood, but it is subject to two objections: in many positions it cannot be easily applied so as to be retained *in situ*, [in place,] and is always disgusting to the nice and fastidious; then it is subject to dry at the edges, and adhere with great tenacity, often causing as much harm in its removal as it did good in its application. To avoid these objections, I conceived the idea of combining it with some non-irritating substance which would not easily dry, and making it into cloth, so as to be of easy application and not subject to dry and adhere; and also avoid the opprobrium of nastiness. Chinese sugar-cane molasses seemed to possess the required properties, and I tried it and succeeded. By first wetting the pulverized slippery-elm bark with water, so as to make a tough mass, and then adding the molasses until it became thin enough to spread, I succeeded in obtaining the article desired. But I found this was not easily done, so as to present a smooth, even sur-

face; after many efforts, however, I succeeded in the following manner: I spread smooth domestic on a flat non-absorbing surface, and spread the mass on it with a broad spatula as well as I could; I then laid another piece of cloth over it, and continued my efforts until I obtained the requisite finish; then dried it in the sun. Afterward, by wetting the surface, the cloth will readily leave the composition, and it presents the appearance of thick, wet parchment, and can be applied in a moment to any part of the body by simply wetting one side, and has the great advantage of adhering with sufficient tenacity to retain its position, and yet will never dry so as to become hard. It is better to allow the covering of cloth to remain until it is wanted for use, and then only remove that on the side intended to be applied to the inflamed surface. For application to sore eyes, and inflammations situated in various parts of the body in which it would be quite inconvenient to apply an ordinary slippery-elm poultice, cloth furnishes a very neat and suitable substitute.

Slippery-elm has been long occasionally used as a bougie; its soothing properties, united with its great powers of expansion by the absorption of water, naturally pointing it out as a suitable material for this purpose. But the great difficulty was to obtain it of a suitable form. This I effected in the following manner, viz.: I split the bark into fine slips, and then, when moistened, pressing them together, and wrapping them thoroughly with twine, and then drying. It can now be trimmed by using a very short knife, and then polished with sand-paper. For very small bougies, a suitable piece of thick bark can, in a very few minutes, be trimmed into the proper shape, and are preferable where we can obtain the bark of the necessary thickness.

It is hardly necessary to dilate upon the advantage of this instrument; it operates more expeditiously, and with less suffering, than any other appliance of which I have any knowledge. Any amount of dilatation can be obtained by it. I have no doubt the urethra can be dilated sufficiently to admit of the removal of small stones with ease. In stricture of the urethra its use is signally beneficial; it

can be introduced when no other bougie or catheter can be passed.

A great advantage of the slippery-elm bougie over every other in efforts to enlarge the urinary passages, besides its soothing properties, is, that when made perforate, it can be allowed to remain until the full effect of its expansion is obtained, without having to be removed in order to allow the urine to pass. Would it not be the most suitable catheter to leave in the urethra after the operation of lithotomy?

While manufacturing the bougie, it occurred to me that this would be the very material of which to make *pessaries*, provided I could succeed in giving it the proper shape, which, after much trouble, I succeeded in doing; since then, I have succeeded in making them with less trouble, and also greatly increased their virtues by suitable medication.

My usual plan and formula is as follows: To one pound of flour of slippery-elm, I add four ounces of pulverized sassafras bark; and of Dover's powder and balsam copaiva, each, two ounces; add water slowly, and work the mass until it acquires the consistence of stiff dough; then roll it into balls of from an inch to two inches in diameter, and put them in the sun or under a stove to dry; when they begin to feel hard, I moisten them, and, after some hours, manipulate them into shape, and then dry again; if they crack, or assume a bad shape, I again moisten them, and repeat the manipulations until I obtain the necessary shape and smoothness.

ALOETIC PILLS.

Take of socotorine aloes, in the finest powder, one drachm and a half; castile soap, one drachm; ginger, half a drachm. Beat them well together, and then add mucilage or syrup sufficient to form a mass, which is to be made into forty-eight pills. Dose for adults, two at bedtime, or a sufficient number to keep the bowels in a regular state.

ANTIMONIAL SOLUTION.

Take of tartar emetic, six grains; water, half a pint; spirits of lavender, thirty drops; sugar, one ounce. Mix. Dose for adults, a wineglassful every fifteen minutes, which should be encouraged by drinking freely of warm water, and afterwards turned downwards by taking a bowl of thin gruel made very salt.

ANTISPASMODIC PILLS.

Take assafœtida, three parts; gum ammonia, two parts; camphor, one part. Beat them well together, and, with as much syrup as is necessary, make into pills of the size of a common pea. From three to five may be taken at a dose, and repeated as often as may be found necessary; not, however, exceeding three or four doses in a day. This is a powerful antispasmodic, and very useful in all nervous and hysterical complaints. When it is wished to render the mass purgative, which is generally proper, add as much socotorine aloes as of camphor.

DIURETIC PILLS.

Take dried squills in fine powder, and calomel, each half a drachm; mucilage of gum-arabic, sufficient to form a mass; and then make twenty pills, two of which are to be taken at bedtime. When the squill alone is given, it may be taken in doses of two or three grains, three or four times a day, in the form of pills, by adults.

COUGH MIXTURE.

Take of elixir paregoric, one ounce and a half; antimonial wine and syrup of squills, each one ounce; lac ammoniac, four ounces; syrup bal. tolu, one ounce. Dose, half a tablespoonful every two or three hours for adults.

Or, take of tincture of opium, one drachm; wine of ipecacuanha, half a drachm; oxymel of squills, half an ounce. Mix. Dose for adults, a teaspoonful every two hours while the cough is severe.

FORMULAS

NOT FOUND IN ANY FORMER EDITION OF THIS WORK.

FOR SKIN DISEASES.

For acne, or hard pimple, appearing chiefly on the face of healthy and vigorous young persons: Bi carbonate of soda, half an ounce; bi chloride of mercury, (corrosive sublimate,) four grains; water, one pint. Mix, and apply every morning and evening.

FOR SCALD-HEAD.

Beefs-foot oil, four ounces; oil of sassafras, one drachm, or common tea-spoonful. Mix. Apply once a day.

FOR ECTHYMA—BURNING TETTER.

Laudanum, half an ounce; spirits of camphor and glycerine, each one ounce; water, six ounces. Mix. Sponge the surface twice a day.

FOR LICHEN,

And other eruptions attended with much burning and itching: Laudanum, one ounce; oil of sassafras, half an ounce; glycerine, four ounces. Apply with a mop once or twice a day.

FOR SCABIAS, OR ITCH.

Flour of sulphur, two ounces; honey, four ounces; iodide of potash, half an ounce; water, four ounces. Mix, dissolve, and shake well, and give from a tea-spoonful to a table-spoonful, according to age. Repeat night and morning until all

appearance of the disease has been absent for a week or ten days.

FOR HERPES, OR MOIST TETTER.

Corrosive sublimate, thirty grains; oil of sassafras, half an ounce; alcohol, four ounces. Mix. Apply once a day until some inflammation is set up, then discontinue and use only glycerine. If the disease threatens to return, use again the above; and this may have to be done until the third or fourth time before the tetter will cease to reappear. This prescription will cure all the stubborn skin diseases, such as *tinea capitis*, or scald-head, *crusta lactea*, or milk scab, etc. If, however, it should fail to get up some inflammation of its own in a few days, there must be more corrosive sublimate added. Double the quantity advised has been used with impunity.

FOR HEMORRHAGES.

Bleeding at the nose. A plug of fat bacon, tapered to fit the nostril, and pushed in tight and far enough to reach the throat.

BLEEDING FROM THE LUNGS.

A teacupful of salt and water, as strong as it can be made.

BLEEDING FROM THE STOMACH.

A heaping tea-spoonful of common wheat flour stirred into a glass of cold water, and drank at once. This will arrest any internal hemorrhage, whether from the stomach, bowels, uterus, or kidneys, etc.

FOR ARRESTING PROFUSE DISCHARGE FROM ULCERS,

And bringing them to a healthy condition. Pulverized nutmeg and calomel, equal parts. Rub them together, and dust the sore once or twice a day.

FOR IRRITABLE URETHRA OR BLADDER.

Symptoms like gravel in pregnancy. Bromide of potassa, fifteen grains three times a day.

Or, creosote, twelve drops; cinnamon water, two ounces. Mix. Give a teaspoonful every three hours.

Or, bi carb. potassa, one drachm; water, half a pint. Mix. Give a table-spoonful every three hours.

FOR GONORRHEA.

Oil of gregeron, ten drops taken on a lump of sugar every three hours until cured.

INJECTION FOR GONORRHEA.

Acetate of lead and sulphate of zinc, each eight grains; water, four ounces. Inject immediately after passing urine each time.

FOR LEUCORRHEA OR WHITES.

Tincture of iodine, one ounce; water, one pint. Mix. Inject freely with soap-suds, then with plain water, and then inject half a teacupful of the above on going to bed. Repeat every night.

FOR DIPHTHERIA.

Per manganate of potassa, one-half grain; white sugar, the size of a pea. Rub together and place it on the child's tongue.

Elixir vitriol; three times as much water. Apply with small mop to the false membrane.

FOR BOWEL COMPLAINTS, COLIC, ETC.

Oil of anise and oil of cinnamon, each twenty drops; spirits of camphor, spirits of niter, sulphuric ether, laudanum, each sixty drops. Mix. Dose for an adult, from thirty to sixty drops.

FOR DROPSY.

The following was a great favorite with Dr. Parrish, and has been used with much advantage by myself. Take of juniper berries, mustard seeds, ginger root, each, bruised, one ounce; horse-radish, parsley-root, each, bruised, two ounces; hard cider, two quarts. A wine-glassful to be taken four times a day, and gradually increased.

TABLES OF MEDICINE.

THE following tables of medicine will be found sufficient to answer every purpose of practice, and the expense will be found nothing compared to the great advantages which must result from being constantly supplied with them. To render the work still more complete, I have, in these tables, annexed to the medicines their doses, according to the age of the patient; observing, however, that whatever general rule may be given, it can only be applied with reference to the habit and state of the patient. The judgment of the person who administers the medicine must, therefore, be exercised in this respect. It will be found that the constitution is often attended with certain peculiarities, both in relation to medicine in general, and also to certain substances particularly, which knowledge is only to be obtained by experience.

EXPLANATION OF WEIGHTS AND MEASURES.

gr	20 grains make	1 scruple.
℈	3 scruples	1 drachm.
ʒ	8 drachms	1 ounce.
℥	12 ounces	1 pound.

A teaspoonful is equal to 60 drops, or 1 drachm.
A tablespoonful is the measure of ½ ounce.
A large wineglassful is equal to 2 ounces.

A TABLE OF MEDICINES FOR FAMILY USE,

WITH THEIR DOSES AND QUALITIES ANNEXED.

These doses must be increased, or diminished, according to the strength and habit of the patient.

MEDICINES.	ADULT.	FROM 15 to 10.	FROM 10 TO 6.	FROM 6 TO 4.	FROM 4 TO 2.	FROM 2 TO 1.	UNDER 1.	QUALITIES.
Arsenic, solution of.	5 to 12 drops	4 to 8 drops	3 to 6 drops	2 to 5 drops	1 to 4 drops	½ to 3 drops	½ to 2 drops	Tonic.
Antimonial wine ...	3 to 4 drachms	2½ to 3 drms.	2 to 2½ drms.	½ to 2½ drms.	1 to 2 drachms	1 to 1½ drms.	½ to 1 drachm	Emetic.
— as a diaphoretic...	26 to 60 drops	15 to 40 drops	12 to 30 drops	10 to 20 drops	8 to 15 drops	6 to 10 drops	4 to 8 drops	Diaphoretic.
Alum	5 to 15 grains	3 to 10 grains	2 to 7 grains	1½ to 5 grains	1 to 3 grains	.....	.....	Astringent.
Aloes	5 to 20 grains	3½ to 15 grains	3 to 12 grains	2 to 10 grains	1¼ to 8 grains	.....	.....	Cathartic.
Arrow-root	.....	.....	.....	.....	.....	.....	.....	Nutritious food.
Balsam copaiva.....	20 to 80 drops	15 to 40 drops	12 to 30 drops	10 to 20 drops	8 to 15 drops	5 to 10 drops	.....	Corroborant.
Balsam, Turlington.	20 to 80 drops	15 to 40 drops	12 to 30 drops	10 to 20 drops	8 to 15 drops	5 to 10 drops	.....	Corroborant.
Barley	.....	.....	.....	.....	.....	.....	.....	Nutritive.
Bitters.....	2 to 4 drachms	1 to 2 drachms	.....	.....	.....	.....	.....	Stomachic.
Borax	.....	.....	.....	.....	.....	.....	.....	Deterg. externally.
Bark, Peruvian.....	30 grs. to 2 drms.	25 to 1¼ drms.	20 gr. to 1 drm.	15 to 40 grains	12 to 30 grains	10 to 25 grains	6 to 16 grains	Tonic and antiseptic.
Calomel.....	10 to 30 grains	8 to 20 grains	6 to 15 grains	5 to 12 grains	4 to 10 grains	3 to 8 grains	1 to 5 grains	Active purgative.
Camphor.....	4 to 20 grains	2 to 10 grains	2 to 6 grains	2 to 4 grains	1 to 3 grains	1 to 2 grains	½ to 1 grain	Stimulant.
Cream of tartar.....	4 to 12 drachms	3 to 8 drachms	2 to 5 drachms	2 to 4 drachms	1 to 3 drachms	½ to 2 drachms.	½ to 1 drachm	Cooling aperient.
Caustic vol. alk. liq.	½ to 2 drachms	½ to 1 drachm	25 to 50 drops	20 to 40 drops	15 to 30 drops	10 to 20 drops	.....	Stimulant.
Corrosive sublimate	.....	.....	.....	.....	.....	.....	.....	Anti-venereal.
Columbo.....	10 to 60 grains	8 to 40 grains	7 to 35 grains	6 to 25 grains	5 to 20 grains	4 to 15 grains	2 to 10 grains	Stomachic and tonic.
Chalk, prepared.....	25 to 50 grains	16 to 40 grains	15 to 35 grains	12 to 30 grains	10 to 25 grains	7 to 20 grains	5 to 12 grains	Absorbent.
Camomile flowers ...	.....	.....	.....	.....	.....	.....	.....	Stom. and antiseptic
Castile soap.....	20 to 80 grains	20 to 50 grains	15 to 40 grains	12 to 30 grains	10 to 25 grains	8 to 20 grains	5 to 10 grains	Attenuant and deter.
Croton oil.....	1 to 4 drops	½ to 2 drops	½ to 1 drop	¼ to ¾ drop	1-6 to ½ drop	⅛ to ¼ drop	⅛ to ¼ drop	Cathartic.
Castor oil.....	4 to 12 drachms	3 to 8 drachms	2½ to 6 drms.	2 to 5 drachms	1⅓ to 4 drms.	1 to 3 drachms	1 to 2 drachms	Purgative.
Essence peppermint	10 to 50 drops	8 to 30 drops	6 to 20 drops	4 to 15 drops	3 to 12 drops	2 to 10 drops	1 to 6 drops	Carminative.
Elixir vitriol.....	15 to 40 drops	10 to 30 drops	8 to 20 drops	6 to 15 drops	4 to 10 drops	2 to 6 drops	1 to 4 drops	Tonic.
Æther, vitriolic.....	½ to 2 drachms	30 dps. to 1 drm.	18 dps. to 1 drm.	15 to 50 drops	12 to 40 drops	8 to 30 drops	5 to 10 drops	Stimulant.
Flax-seed	.....	.....	.....	.....	.....	.....	.....	Pectoral and obtund.
Ginger.....	5 to 25 grains	4 to 18 grains	3 to 15 grains	3 to 12 grains	2 to 10 grains	2 to 8 grains	1 to 6 grains	Aromatic.

MEDICINES.	ADULT.	FROM 15 TO 10.	FROM 10 TO 6.	FROM 6 TO 4.	FROM 4 TO 2.	FROM 2 TO 1.	UNDER 1.	QUALITIES.
Gamboge	6 to 12 grains	4 to 8 grains	3 to 6 grains	.....	.....	.....	.....	Purgative.
Gum-arabic	.....	.....	.....	.....	.....	.....	.....	Obtunding.
Hartshorn, spirit.	½ to 1½ drms.	20 to 50 drops	15 to 30 drops	10 to 15 drops	5 to 10 drops	3 to 8 drops	2 to 6 drops	Stimulant.
Honey	.....	.....	.....	.....	.....	.....	.....	Pectoral.
Ipecacuanha	15 to 30 grains	10 to 20 grains	8 to 15 grains	6 to 12 grains	5 to 10 grains	4 to 8 grains	1 to 5 grains	Emetic.
Jalap	15 to 40 grains	8 to 25 grains	6 to 20 grains	5 to 15 grains	4 to 12 grains	3 to 8 grains	2 to 5 grains	Purgative.
Lunar caustic	1–6 to 3 grains	⅓ to 2 grains	1–10 to 1½ grs.	1-10 to 1 grain	1-12 to ½ grain	.....	.....	Stimulant.
Laudanum	20 to 60 drops	12 to 40 drops	10 to 25 drops	8 to 20 drops	5 to 15 drops	3 to 8 drops	2 to 6 drops	Anodyne.
Morphine, solut. of.	6 to 24 drops	5 to 20 drops	4 to 16 drops	3 to 12 drops	2 to 8 drops	1 to 4 drops	1 to 3 drops	Anodyne.
Magnesia	½ to 2 drms.	20 gr. to 1 drm.	15 to 50 grains	10 to 40 grains	8 to 30 grains	6 to 20 grains	4 to 10 grains	Absorbent.
Manna	1 to 2 ounces	½ to 1½ ounce	½ to 1 ounce	3 to 6 drachms	2 to 4 drachms	1 to 3 drachms	½ to 2 drachms	Mild aperient.
Nitre	10 to 30 grains	8 to 20 grains	5 to 12 grains	2 to 10 grains	2 to 8 grains	1 to 6 grains	1 to 4 grains	Diuretic and febrile.
Nitric acid	.....	.....	.....	.....	.....	.....	.....	Tonic and anti-scor.
Oil of olive	.....	.....	.....	.....	.....	1 to 3 drachms	1 to 2 drachms	Obtunding and open
Opium	½ to 3 grains	¼ to 1 grain	.....	.....	.....	.....	.....	Anodyne & antisep.
Paregoric Elixir	1 to 4 drachms	1 to 2 drachms	50 dps. to 1½ dr.	30 drops to 1 dr.	20 to 50 drops	15 to 30 drops	3 to 20 drops	Anodyne & Pectoral.
Pink Root, Carolina	.....	.....	.....	.....	.....	.....	.....	Vermifuge.
Rhubarb, powdered.	15 to 50 grains	10 to 40 grains	8 to 30 grains	6 to 25 grains	5 to 20 grains	4 to 12 grains	2 to 10 grains	Mild Cathartic.
Rattlesnake root	.....	.....	.....	.....	.....	.....	.....	Diaphoretic.
Rust of steel	5 to 25 grains	3 to 15 grains	2½ to 3 grains	2 to 10 grains	1 to 6 grains	¼ to 2 grains	.....	Tonic.
Red precipitate	.....	.....	.....	.....	.....	.....	.....	Escharotic.
Sugar of lead	1 to 6 grains	½ to 4 grains	½ to 3 grains	¼ to 3 grains	1-6 to 2 grains	1-8 to 1 grain	.....	Astringent and tonic
Spanish flies	.....	.....	.....	.....	.....	.....	.....	Blistering.
Salts	4 to 16 drachms	3 to 12 drachms	2 to 8 drachms	2 to 6 drachms	1½ to 4 drms.	1 to 3 drachms	½ to 2 drachms	Cathartic.
Salt of tartar	10 to 30 grains	8 to 20 grains	6 to 12 grains	4 to 8 grains	3 to 6 grains	2 to 4 grains	1 to 3 grains	Absorbent & febrile.
Spirits of turpentine	.....	.....	.....	.....	.....	.....	.....	Stimulant.
Sal ammon. volatile.	5 to 20 grains	4 to 12 grains	4 to 10 grains	3 to 8 grains	2 to 6 grains	1½ to 4 grains	1 to 3 grains	Stimulant.
——— crude	.....	.....	.....	.....	.....	.....	.....	Discutient.
Senna	.....	.....	.....	.....	.....	.....	.....	Purgative.
Spirits of lavender	30 dps. to 2 drs.	20 dps. to 1 drm.	15 to 50 drops	12 to 40 drops	10 to 30 drops	6 to 20 drops	2 to 10 drops	Cordial.
Sulphur, flour of	2 to 8 drachms	1 to 4 drachms	1 to 3 drachms	½ to 2 drachms	20 gr. to 1 drm.	10 to 40 grains	5 to 20 grains	Aperient.
Tamarinds	.....	.....	.....	.....	.....	.....	.....	Cooling laxative.
Tartar emetic	2 to 6 grains	2 to 4 grains	1½ to 3 grains	1 to 2 grains	½ to 1 grain	½ to 1 grain	¼ to 1 grain	Emetic.
Tincture of steel	8 to 18 drops	5 to 12 drops	4 to 10 drops	3 to 8 drops	2 to 6 drops	1 to 5 drops	2 to 3 drops	Tonic.
—— rheumatic	½ to 1 ounce	2 to 4 drachms	1 to 3 drachms	½ to 2 drachms	20 to 60 drops	.....	.....	Anti-rheumatic.
—— bark	2 to 6 drachms	1½ to 4 drms.	1 to 3½ drms.	1 to 3 drachms	¾ to 2 drachms	½ to 1½ drms.	20 to 40 drops	Tonic.
—— rhubarb	4 drms. to 2 oz.	3 to 8 drachms	2 to 6 drachms.	2 to 5 drachms	1½ to 3 drms.	1 to 2 drachms	20 to 40 drops	Mild cathar. & stom.
—— fox-glove	10 to 60 drops	8 to 40 drops	6 to 30 drops	5 to 20 drops	4 to 15 drops	2 to 12 drops	1 to 8 drops	Diuretic.
—— cantharides	10 to 50 drops	10 to 40 drops	8 to 30 drops	6 to 20 drops	4 to 15 drops	2 to 5 drops	1 to 5 drops	Stimulant.
—— columbo	1 to 4 drachms	1 to 3 drachms	40 dps. to 2½ dr.	30 drops to 2 dr.	20 dps. to 1½ dr.	15 dps. to 1 drm.	10 to 40 drops	Tonic.
—— myrrh	.....	.....	.....	.....	.....	.....	.....	Detergent.
Vitriol, white	20 to 60 grains	14 to 30 grains	6 to 15 grains	4 to 10 grains	2 to 5 grains	1 to 3 grains	.....	Emetic.
—— as a tonic	2 to 5 grains	1 to 3½ grains	½ to 2 grains	¼ to 1 grain	.....	.....	.....	Tonic.
—— blue	.....	.....	.....	.....	.....	.....	.....	Escharotic.
Virginia snake root.	10 to 20 grains	8 to 15 grains	6 to 10 grains	3 to 6 grains	1 to 4 grains	1 to 3 grains	.....	Stimulant and stom.

APPENDIX.

THERE are a few subjects, which have been omitted from the body of this work, that are deemed of sufficient importance to be placed in an *appendix*. Of these are, first,

HERNIA—RUPTURE.

HERNIA signifies a protrusion of any of the constituents of the body through the sack or investing membrane which naturally confines or contains it. Thus, when the skull is broken and a part of it displaced, the brain often protrudes through the opening, and is called *hernia cerebri*, but the term *hernia* will here be confined to designate the protrusion of the contents of the abdomen, or belly. This generally takes place in the front part of the body, where the walls are thinnest or weakest, and most often through the natural openings through which the great blood-vessels pass, as in the groin. The complaint has received different names indicating the locality of the misfortune, as *umbilical hernia* when the *rupture* is at the *navel*, *inguinal hernia* when it is in the groin, and *femoral hernia* when the parts escape through the opening which gives passage to the great femoral artery, veins, etc. Inguinal hernia is incomparably the most common, and will be kept in view in the following remarks. In this case some of the contents of the abdomen, generally a little of the omentum, which is that fold of the peritoneum reflected from the stomach and great arch of the colon, and falls loosely down over the other viscera, and hence is aptly called the *apron*. But after the

disease has continued some time, and the opening becomes larger, other contents of the abdomen protrude, until, in some old cases, the greater part of the bowels hang outside of the belly, forming a troublesome and unsightly tumor, occupying the scrotum, greatly enlarged, sometimes descending half-way to the knees. In the early stage of this disease it is often mistaken for *buboes*, or scrofulous enlargements of the inguinal glands, but may easily be distinguished from these by placing the patient on his back and making pressure on the tumor; if it be a hernia the tumor will quickly disappear, and the finger can detect the opening through which it has escaped into the belly. It is very fortunate to the patient when the nature of the disease is discovered thus early, as it can now be remedied with very little difficulty. The brains of the medical profession, and those of many outsiders, have been exercised for hundreds of years in devising mechanical means for remedying this defect in the walls of the abdomen, and cart-loads of *trusses* may be collected among the rubbish in any of our large drug establishments, indicating the general failure of success. And yet a very simple contrivance will insure success. What is necessary to be accomplished in these cases is to keep the part from protruding, not generally, but always and certainly. For, should you succeed ninety-nine times and fail in the hundredth, the disease in that case is not only not benefited, but is made worse. Now, no truss which depends on a spring can ever succeed. If the spring be made strong enough to resist the ordinary straining incident to common labor it will cause so much distress that the patient can not, nor ought he to bear it.

A very simple contrivance, which any person of common sense can make for himself, will answer the purpose completely. Procure a piece of firm sole-leather two and one-half inches one way and five inches the other; whittle out a piece of hard wood the size and shape of half a small hen's egg; place this about the middle of the piece of leather, and then drive saddler's tacks through the leather into it sufficient to fix it firmly. Now tack on some straps with buckles attached to each end of the

leather; place this leather obliquely, so that one part will extend downward toward the scrotum, and the other point upward toward the back part of the shoulder on that side; adjust the end of the egg-shaped piece of wood to the hole—which you can feel—through which the *hernia* has been returned. Now, by suitable straps, one coming round the body, and another passing round the thigh from the lower buckle, you can easily fix this little conical ball so that it will press firmly into the canal through which the hernia has passed. A little effort on the part of any person of ordinary sense will enable them, after a few trials, to succeed in adjusting this instrument so that it will effectually keep the protruding part up, and in a short time adhesions will take place so as to make the misfortune much less likely to occur than in cases in which it had never happened.

When it is considered that, as some have estimated, one-fifth of our male population are ruptured, and that it is rarely cured by ordinary means, the importance of the above suggestions may in some measure be estimated. Any stage of this disease may be managed upon this plan, but of course the size of the plug must correspond to the extent of the opening. The author once successfully treated a case in which at least one-half of the contents of the abdomen hung down between the legs, and almost prevented locomotion.

But if you think you have not sufficient mechanical contrivance to make such a truss for yourself, inquire for Banning's *Supporter Truss*. It acts upon pretty much the same principle as the above. Every person who has the misfortune of being ruptured should be careful not to let the hernia remain out any considerable time, as adhesions may, and are very likely to take place between the part protruded and the *hernial sack*, which would prevent the return of the hernia. And then, while it is out, there is constant danger that it may become *strangulated*. This may take place when the part protruded may become swollen from having been bruised, or when there is a fold of the bowels involved by the forcible injection of wind or fæces into it.

In this case the ring, through which the hernia passes, acts as a ligature to prevent the return of blood through the veins, while the arteries, by having a greater propelling power, still force the blood into it. In this way the pressure may soon become so great as to cause even mortification of the part. Perhaps there is no case dwelt upon in this work in which it is more important that the *people* should understand what to do in the absence of a physician. I will therefore be as plain as possible on this subject. As soon as you find that the hernia is strangulated, which may be known at once by a sudden enlargement and the part becoming painful, place yourself on your back, with the hips considerably higher than the body, and, having covered the part with a warm, wet cloth, proceed to use the *taxes;* that is, place one hand flat over the tumor, and with the fingers of the other manipulate by stuffing the contents into the belly through the ring. It was formerly the custom to bleed and give nauseants in order to produce relaxation, but now we use *anæsthesis;* that is, make the patient inhale chloroform or ether, or, what is better, both of these combined. If, therefore, you can not reduce the hernia by the *taxes* and *position*, send immediately for your doctor; and if no intelligent physician can be had, some neighbor, who has common-sense and firmness, and, after inhaling the anæsthesis until you begin to hear ringing in your ears, let him go vigorously to work to push the contents of the hernia through the ring. If the part can not be returned, and begins to turn black, and become insensible, you may know that mortification is taking place, and a competent surgeon must be obtained, or a fatal result will probably speedily follow. And yet there have been cases in which a considerable fold of the bowel has mortified and sloughed off, and yet the patient did not die.

ON MARRIAGE—CHILD-BEARING.

I HAVE thought, and still believe, that dissertations on morals, family government, etc., were out of place in a

medical work, and had better be left to those whose business it is to teach these things; but there is one subject which I think is so closely allied to medicine that it may appropriately find a place in this appendix: I mean the subject of *Marriage* and *Child-bearing*.

There is no subject less under the direction of science or sound judgment than choosing a companion. Some are influenced by a symmetrical form, or a beautiful face; others by conversational powers, either sprightly or lighted by the scintillations of genius; others by wealth; some by position, and a multitude by mere convenience. Now, any, or all of these, will not furnish a good foundation for a union in the marriage state unless there also be a physiological adaptation. One very important matter is *temperament*. If two come together of the same temperament the union can never be a happy one. If of the *bilious melancholic*, they will mope together through life, each acting toward the other as a somber cloud, shutting out every ray of genial light, and their offspring will be *misanthropes*, lunatics, or fitted for deeds of darkness. Should both be of the *sanguino-bilious*, neither will give an inch, and bitter collisions will certainly be frequent, and their children will be the terror of their neighborhood, and a scourge to society. Then suppose both are of the *sanguine*, their lives will be a constant alternation of sunshine and showers, of calms and storms, of quarrels and embraces; and, should both be of the petuitary or phlegmatic, they will listlessly float through life, without object or aim, and their offspring will die before they form any character. But, fortunately, *instinct* powerfully tends to prevent such unions, and if consulted would do it always. Upon taking a survey of married life, in a pretty large scale, if you never thought of it before, you will be astonished to find how generally *opposites* have been united. Those who are tall naturally take to the short, and the converse; a great talker likes a good listener; and the quiet love the hilarious; so will the weak and beautiful cling to the strong and the rough. The man of deep thought and erudition will choose a companion who can cheer and enliven him, and do n't want her to be scientific.

The same *instinct* very generally causes a mixing of the temperaments. If it were not so the race would soon become depraved, and afterward extinct. We can not extend this chapter so as to show the bearing which unions of the same temperament will have upon the minds, morals, and health of the descendants through all their combinations, but will leave the reader to study it out by looking around upon society and noticing the consequences.

There is still another matter, even of more consequence than this, which should be looked to in choosing a mate for life; that is, the actual state of present health. Now, what can be more foolish than for two tuberculous or consumptive individuals to come together in the marriage relation, the certain consequence being an early death of both; and if they should live long enough to be surrounded with fair, beautiful, precocious, bright-eyed children, to see them drop off, one after another, to fill a little grave. And, if only one be tainted with these terrible diseases, why should that one blast his fair prospects of earthly happiness with only the certainty of hastening the fatal issue with the other; and, most probably, also entailing the same disease to posterity? In this same category may justly be classed those who inherit cancer, lunacy, leprosy, etc. I look upon the marriage relation as the *natural* condition of our race, and no individual can enjoy the *full* measure of happiness traveling life's journey alone that he might if united with a congenial companion. But those who are afflicted with these incurable maladies will not add to their enjoyment by marrying, and will certainly shorten their lease of life. Then why should a sound individual marry such an one, when the certainty is that the grief of an early separation is inevitable, and the chances are two to one that both will go near together? It is now settled beyond all dispute that consumption, at least, is often communicated to a healthy individual by living in close connection with one suffering from that disease. Within my own observation there have occurred quite a number of very clear examples of this. Only a few years ago I knew a family, consisting of a father, who was decidedly consumptive, three children,

who were beautiful and precocious, a mother, who was the picture of health, and a sister of hers, who was as sound as *lignum vita*. But the father at last sunk under the disease; lingered long enough, however, to infect his wife, who took to her bed on coming from his grave, and in two months was laid beside him. Her sister naturally became her nurse, breathed the infected atmosphere, and she, too, was laid in the same row before the close of the year, and three little graves are now beside them. I am aware that common humanity, as well as natural affection, will render it imperative that we do not forsake our declining friends, but common prudence will dictate that the nurse should not *sleep* in close proximity to the invalid, and that they should enjoy as much fresh air as possible.

Disinfectants should always be freely used in the sick-room, and the discharges from the lungs removed very often. As good a disinfectant as any, and a cheap one, is Copperas.

We will make a few observations about *Child-bearing*. As the marriage relation is the natural condition of both man and woman, so is child-bearing the natural condition of woman, and, failing in this, she will inevitably suffer a penalty; and this will be inflicted whether she be to blame for the omission or not. I confidently assert that a woman at forty, who has had ten children, and even had to toil to support them, will be stronger, and sounder, and look younger than her sister, who has never married, and lived at ease, will at thirty-five. And if married, and has used means the most innocent for avoiding conception, the difference will be still greater. Within a few years past a SUICIDAL MANIA has taken hold of a large class of American women upon the subject of bearing children. I suppose every physician of much practice has noticed the great increase, lately, of applications for means to prevent conception, and to procure abortion; and I am ashamed for my profession, and of my common humanity, to acknowledge that every-where, and especially in every city, there can be DOCTORS found, who, for a consideration, will destroy one life and endanger another. As God commanded man to multi-

ply and replenish the earth, this, as well as every other of his commands, can not be transgressed with impunity. If any physician tells of innocent means for preventing conception, or of procuring an abortion, you may set him down as either a fool or a knave. Even, as is sometimes the case, when an abortion has to be brought about to save the life of the mother, it is looked upon by every sensible, right-minded physician as one of the gravest acts coming within the range of his professional duties. I am aware of the *thousand and one* excuses that females make for desiring to have the fruit of their womb blasted. Some are too poor to maintain children; others are too delicate to bear the ills and sufferings attendant on having children; still others can not endure the privation of being cut off from *society;* and again others, with more show of reason, desire exemption because of a dissipated or worthless husband. Such are indeed objects of commiseration: but even these had "better bear the ills they have than fly to those they know not of." And how often have we seen children, in such cases, prove a blessing in disguise; being a solace while little, and a support in age. It is one of the darkest questions in Psychology why the maternal instinct should be so strong toward even a new-born infant and yet so weak, and often totally wanting, toward the child unborn. It is not so in nature; even the sparrow will watch its nest, and bravely attack the crow or jay-bird, to prevent her unhatched eggs from being destroyed. As I believe it to be the duty and the interest of married women to bear children, and, as there are many cases in which the woman, without any fault on her part, fails to receive pledges of love, it seems to be proper that I should give them such advice as the case admits of for removing this misfortune. If any of the uterine derangements, which have been treated on in this work, be the hindering cause, resort should be had to the means laid down in each case for its removal. But sometimes none of these are present, and yet conception does not take place. This is often the consequence of a lack of tone in the womb, and especially in the ovaries. This may be inferred to be the case when

there is decided lack of desire for sexual intercourse. In this case try the following compound; it has often succeeded:

Tincture of Valerian, four ounces; tincture of Cinchona, two ounces; tincture of Capsicum, one-half ounce; syrup of Wild Cherry, one and one-half ounces. Mix. Take a dessert-spoonful after each meal, in a little water. Besides this, add as much common salt to hot water as it will dissolve, then immerse a piece of flannel into the solution, let it dry, and rub well with this every night and morning, especially the small of the back, the lower part of the abdomen, and the thighs.

GLOSSARY,

OR DICTIONARY OF THE TECHNICAL AND PRINCIPAL WORDS USED IN THIS WORK.

Remarks.—For the convenience of the reader, the author has thought proper to not only define all the technical words and phrases used in this book, but also most of the other principal words—thus avoiding the necessity of referring to a dictionary; and, further, to make the task of becoming familiar with their use easy and pleasant, he has given the accent and pronunciation, which will not only be of great assistance to the common reader, but will commend the work to the medical student who is not a classical scholar, as this advantage can be found in few of the best medical dictionaries.

Another reason for defining words not strictly technical is, that many have a different meaning in medicine from that attached to them in common usage.

Ab'do-men, The belly.
Ab-dom'i-nal, Pertaining to the belly.
Ab-er-ra'tion, Wandering.
Ab-lu'tion, The washing of the body, as by baths.
Ab-nor'mal, Deviation from health.
A-bort', To miscarry in birth; to arrest the progress of a disease.
A-bor'tion, The act of miscarrying; a failing to arrive at maturity.
A-bor'tive, Failing in its effects; coming to naught; producing nothing
Ab-rade', To rub or wear off; to waste by friction.
Ab-rad'ed, Rubbed or worn off; action of sharp, corrosive medicines.
Ab-ra'sion, The act of wearing away or rubbing off.
Ab'scess, A tumor containing matter.

Ab-sorb′, To drink in; to imbibe as a sponge.

Ab-sorb′ent, A vessel which imbibes; a powder or substance which imbibes the humors of the body.

Ab-sorp′tion, The act of drinking in or imbibing.

Ab-ste′mi-ous, Refraining from the free use of food or strong drinks.

Ab-ste′mi-ous-ness, The quality of being temperate or sparing in food and drink.

Ab′sti-nence, The refraining from an indulgence of the appetite; a fasting.

Ab-strac′tion, The act or state of being separated; absence of mind.

Ac-cel′er-ate, To hasten; to quicken motion.

Ac-cess′ion, A coming to; an acceding to and joining; that which is added; augmentation.

Ac′ces-so-ry, Contributing; aiding in producing an effect.

Ac-cou-cheur′, A man who assists women in childbirth.

A-ces′cent, Turning sour; becoming acid by spontaneous decomposition.

A-ce′tous, sour; having the nature of or like vinegar.

Ac-e-tab′u-lum, Socket of the thigh-bone.

Ac′e-tate, A neutral salt, formed by the union of acetic acid with any salifiable base.

A-ce′tic, A term used to denote a particular acid.

Ac′id, sour, sharp, or biting to the taste; having the taste of vinegar.

A-cid′i-fied, Made acid; converted into acid.

A-cid′i-fy, To convert into acid.

A-cid′ity, The quality of being sour.

A-cid′u-late, To make acid in a moderate degree.

Ac′me, The top or highest point.

Ac′ne, A small, hard pimple on the face.

Ac′o-nite, The herb wolf's-bane.

Ac′rid, sharp; pungent; bitter; biting to the taste.

Ac′ri-mo-ny, sharpness; a quality of bodies which corrodes or destroys.

A-cu′mi-nate, Ending in a sharp point; pointed.

A-cute′, sharp at the end. An acute disease is one which is attended with violent symptoms, and comes speedily to a crisis.

Ac′nœa, A disease consisting of pimples.

Ad-he′sion, The act or state of sticking or being attached to.

Ad-he′sive, Sticky; tenacious or glutinous.

Ad′i-pose, Fat.

Ad-ja′cent, Bordering upon; that which is next to, or contiguous.

Ad′junct, Something added to another, but not essentially a part of it.

Ad-ju'vant, An assistant; that which helps or aids.
Ad-ju'vant, A medicine that assists and promotes the operation of others.
A-dul'ter-ate, To make impure by the admixture of baser materials.
A-dy-nam'ic, Weak; impotent; a low grade of fever.
A-e-ra'tion, Exposure to the atmosphere.
Af'flux, The act of flowing to, or that which flows.
Af-fu'sion, The act of pouring upon.
Al'a, A wing.
Al-bu'men, A peculiar substance found in the white of an egg, in blood, muscles, bones, etc.
Al'e-poï-ca, A substance similar to arrow-root.
Al'i-ment, That which nourishes; food.
Al-i-ment'a-ry, Pertaining to aliment or food.
Al-i-ment'ary Ca-nal', The stomach and intestines.
Al-i-ment-a'tion, The act or power of affording nutriment.
Al'ka-li, Any substance capable of combining with and destroying the acidity of acids.
Al'ka-line, Having the properties of alkali.
Al-lay', To make quiet; to abate or subdue.
Al-lu'vi-al, Carried by water and lodged.
Al-o-et'ic, A medicine consisting chiefly of aloes.
Al'ter-ant, A medicine which gradually corrects the state of the body.
Al'ter-a-tive, Causing alteration; having power to change.
Al-tern'ate, To happen or act by turns.
Al-tern'a-tive, Offering a choice of two things.
Al've-o-la, Little pits, cells, or sockets; sockets of the teeth.
Al've-o-lar, Containing sockets.
Al'vine, Belonging or relating to the belly or intestines.
Am-au-ro'sis, A loss of sight without any visible defect in the eye.
A-me'lio-rate, To make better; to alleviate.
A-men-or-rhœ'a, A partial or total obstruction of the menses.
A-men-or-rhe'sis, An obstructed state of the menses.
Am-mo'ni-a, A volatile alkali.
Am-mo-ni'a-cal, Pertaining to ammonia.
Am-mo-ni'a-ted, Mixed with ammonia.
A-morph'ous, Having no regular form.
Am'pu-tate, To cut off.
A-nal'o-gy, An agreement or likeness between things.
A-nal'o-gous, Resembling; similar.
An'a-lyze, To separate into constituent parts.

An-a-sar ca, A dropsy of the cellular tissue.
An-æs-the'sia, Loss of sensibility.
An'eu-rism, A preternatural dilatation or rupture of the coats of an artery.
An-gi'na, A quinsy; an inflammation of the throat.
An-gi'na Pec'to-ris, A spasmodic affection of the chest, or neuralgia of the heart.
An-em'ic, Impoverished state of the blood.
An-e'mia, Privation of blood.
An-i-mal'cule, An animal or insect not visible to the naked eye.
An'i-mal-ize, To give animal life; to endow with the properties of animals.
A-nom'a-lous, Irregular; deviating from a general rule.
A-nom'a-lies, Deviations from rule
An'o-dyne, Any medicine which allays pain and causes sleep.
A-næ'mia, A disease consisting of a loss of blood, or an impoverished state of the blood.
An'o-rex-ia, Want of appetite.
Ant-ac'id, A remedy for sourness or acidity.
An-te'ri-or, Before in time or place; prior.
An-te-ri-or'i-ty, State of being before.
An-thel-min'tic, Medicine that kills worms; good against worms.
An'ti-dote, A medicine to counteract the effects of poison.
An-ti-mo'ni-al, A preparation of antimony.
An-ti-phlo-gis'tic, Counteracting inflammation.
An-ti-sep'tic, Counteracting putrefaction.
An-ti-spas-mod'ic, A remedy for spasms or convulsions.
An-ti-scor-bu'tic, Good against the scurvy.
An-tro-ver'sion, A falling forwards.
A'nus, Orifice of the alimentary canal.
A'num, Per A'num, By the fundament.
A-ort'a, The great artery or trunk of the arterial system.
A-ort'ic, Belonging to the aorta.
Ap'a-thy, Want of feeling; insensibility to pain.
A-pe'ri-ent, A gently purgative medicine.
A-pho'nia, Loss of the voice.
Aph'tha, The thrush.
Aph'thous, Relating to the throat; thrush-like.
Aph-nœ'a, Difficulty of breathing.
A'pi-ces, Sharpened terminations.

Ap'o-plexy, A sudden deprivation of all sense and voluntary motion.
Ap-po-si'tion, Placed in contact; a setting together.
A'que-ous, Watery.
A'qua Ammonia, Water of ammonia.
A-rach'noid, A semi-transparent membrane spread over the brain.
Ar-e-o'la, The colored circle around the nipple, or a pustule.
Ar-o-mat'ic, Fragrant; spicy; pungent.
Ar'o-ma, The quality of plants which constitutes their fragrance.
Ar-tic'u-la-ted, Jointed.
Ar-tic'u-lar, Belonging to the joints.
Ar'te-ry, A cylindrical tube, conveying blood from the heart.
Ar-te'ri-al, Pertaining to the arteries.
Ar-te-ri-al-i-za'tion, The formation of blood.
As-car'i-des, A species of small worms infesting the lower bowel.
As-car'is Lum-bri-coi'des, Large, round, intestinal worms.
As-ci'tes, A kind of dropsy; elastic swelling of the belly.
As-per'i-ty, Roughness of surface.
As-per'sion, A sprinkling.
As-phyx'ia, Apparent death; suspended animation.
As-phyx'ia-ted, In an insensible state; apparently dead.
As-sim'i-late, To bring to a likeness.
As-sim'i-la-ted, Changed into a like substance.
Asth'ma, Difficulty of breathing, with cough and wheezing.
Asth-mat'ic, Pertaining to asthma.
As-then'ic, Weak; characterized by extreme debility.
As-tring'ent, Binding; contracting.
As-tute', Shrewd; learned.
At'o-my, Same as Anatomy.
At'ro-phy, A wasting of the flesh.
At'ro-phied, Wasted.
At-ten'u-ant, Making thin; medicines for reducing the body.
Au'gu-ry, An omen; prognostication.
Aug'ment-ed, Increased.
Au'ra-epi-lep-tic, A peculiar sensation preceding a fit of epilepsy.
Au'ri-um, Ringing in the ears.
Aus-cul-ta'tion, Method of distinguishing diseases by listening to sounds through a tube applied to the surface.
Ax'il-la, The arm-pit.

Bane'ful, Poisonous; hurtful.

Bar'na-cle, A shell found on the bottom of ships; rocks and timber below the surface of the sea.

Bi-car'bo-nate of Soda, The common soda of the shops; the supercarbonate of soda.

Bile, A yellow, bitter liquor, separated from the blood in the liver.

Bil'ia-ry, Belonging to bile; conveying bile.

Bis'tou-ry, A surgical instrument for making incisions.

Bland, Mild; soft; gentle.

Bou-gie', A taper body, introduced into a passage to keep it open.

Bron'chia, The smaller ramifications of the wind-pipe.

Bron-chi'tis, Inflammation of the bronchia.

Bron-chot'o-my, An incision into the wind-pipe.

Bro'mi-um, The base of bromic acid.

Bu'bo, A tumor or abscess in certain glandular parts, as the groin or arm-pit.

Bul-læ, Little blisters.

Bur-sæ—Bursæ Mucosum—Little bags or glands which furnish lubricating matter for the joints, tendons, etc.

Ca-chex'ia, A deranged state of the constitution without fever or nervous disease.

Ca-chec'tic, Having an ill habit of body.

Cæ'cum, The commencement of the large intestines; the blind gut.

Ca-dav'er-ic, Pale; death-like.

Cal'cu-lous, Stony; gritty.

Cal'cu-li, Stones; gravel.

Cal'cu-lus, The stone in the bladder.

Cal-ca're-ous, Partaking of the nature of lime.

Cal'lous, Hard; insensible.

Cam'pho-ra-ted Tincture of Opium, Paregoric.

Can-thar'i-des, Spanish flies, used to raise blisters.

Can'u-la, A small tube.

Ca-pri'cious, Freakish; whimsical; unsteady.

Cap'si-cum, Guinea pepper.

Cap'il-la-ry, A fine vessel or canal.

Cap'il-la-ries, The very minute vessels between the arteries and veins.

Cap'il-la-ry Tro'char, A very fine instrument.

Cap'sules, Little globes of gum-arabic containing medicine.

Car'bon, An elementary substance forming the basis of animal and vegetable charcoal.

Car'bon-a-ted, Combined with carbonic acid.
Car'di-ac, Pertaining to the heart.
Car'di-ac Re'gion, Region of the heart.
Card'a-mom, An aromatic seed.
Car-di'tis, Inflammation of the fleshy substance of the heart.
Car-di-al'gi-a, Heartburn.
Car-ci-no'ma, A cancer.
Car-di-ac Or'i-fice, Upper orifice of the stomach.
Car'i-ca-ture, A ridiculous or grotesque resemblance.
Ca'ri-es, The decay of a bone.
Ca'ri-ous, Decayed, rotten, as a tooth or bone.
Car-min'a-tive, Medicine which tends to expel wind, and relieve colic and flatulence.
Ca-rot'id Ar'te-ries, Great arteries of the neck.
Car'ti-lage, Gristle; a solid elastic substance softer than bone.
Cat'a-plasm, A poultice or soft plaster.
Ca-tarrh', A discharge from the head or throat.
Ca-tarrh'al, Produced by cold or catarrh.
Cat'a-lep-sy, A nervous affection, in which the spasms hold the patient in one position and senseless.
Ca-thar'tic, A purgative medicine.
Cat-a-me'ni-a, Monthly flowings of females.
Cat'e-chu, An astringent vegetable extract.
Cath'e-ter, A tubular instrument to draw off urine.
Cav'ern-ous Res-pi-ra'tion, A hollow sound produced by cavities in the lungs.
Caus-a'tion, The act of causing or producing; the agency by which an effect is produced.
Caus'tic, Burning; corroding like fire.
Cau'ter-ize, To burn or sear with a hot iron, or caustic medicines.
Cau'ter-y, That which burns or sears.
Cel'lu-lar, Consisting of little cells.
Cel'lu-lar Tis'sue, A loose substance, uniting the parts of the body, the cells of which are reservoirs for fat.
Cen-trif'u-gal, Tending to recede from the centre.
Ceph-al-al'gia, The headache.
Cer-e-bel'lum, The hinder and lower part of the brain, or the little brain.
Cer'e-brum, The front and larger part of the brain.
Ce-re'bri-form, Like the brain.
Cer'e-bral, Pertaining to the brain.

Cer'e-bro-Spi-nal Centres, The brain and spinal marrow.
Cer'e-bri-tis, Inflammation of the brain.
Cer'vix, The neck of the womb.
Cha-lyb'e-ate, Any water or other liquor into which iron enters.
Chan'cre, A venereal ulcer.
Charl'a-tan, A quack; one who makes unwarrantable pretensions to skill.
Cha'ry, Careful; fearful.
Chlo'rate, A compound of chloric acid with a salifiable base.
Chlo'rate of Ba'ri-um, A combination of chloric acid and barium.
Chlo'rate of Cal'ci-um, A compound of chloric acid and calcium.
Chlo-ro'sis, The green sickness.
Chlo-rot'ic, Affected by or pertaining to chlorosis.
Chol'er-ic, Inclined to anger; easily irritated.
Chol'er-a, A disease attended by violent vomiting and purging.
Chol'a-gogue, A medicine for producing bilious discharges.
Cho-re'a, St. Vitus's Dance.
Chol'er-ine, A mild form of cholera.
Chyle, A white or milky fluid prepared from the chyme.
Chy-li-fi-ca'tion, The act or process by which chyle is formed.
Chy-lo-po-et'ic Vis'ce-ra, The organs of digestion.
Chyme, The food after it has been digested and passed from the stomach into the bowels.
Chym'i-fied, Formed into chyme.
Chron'ic, Of long continuance, as a chronic disease.
Ci-ca'trix, A scar remaining after a wound or ulcer is healed.
Cic'a-trize, To heal, or induce the formation of a cicatrix.
Cin-cho'na, The Peruvian bark, from which quinine is made.
Cir-cu-la'tion, The act of moving round, as the circulation of the blood.
Cir'cu-la-to-ry, Circular; circulating.
Clam'my, Thick; sticky; glutinous.
Clav'i-cle, The collar-bone.
Clin'i-cal, A description of disease given at the bedside of the patient.
Clon'ic, Shaking; convulsive, as clonic spasm.
Clys'ters, Injections.
Co-ag'u-late, To curdle or congeal; to thicken.
Co-ag'u-la-ble, That may be congealed or made solid.
Co-ag'u-lum, A congealed mass, as curd; a clot of blood.
Co-a-lesce', To unite and adhere in one body or mass.
Coc'cyx, A small bone at the lower extremity of the os sacrum; the crupper bone.

Co-ex-ist'ing, Existing at the same time with another.
Col-laps'ed, Fallen together, as the fine canals or vessels of the body.
Col-liq'ua-tive, Melting; dissolving; wasting the strength of the body.
Col-lat'e-ral, Side by side, as a medicine to aid another.
Col-lyr'i-um, A lotion or wash for the eye.
Co'lon, The largest division of the intestinal canal.
Co lo'di-an, Gun-cotton dissolved in ether.
Co-li'ca Pic-to'num, Lead colic.
Co'ma, Profound lethargic sleep or stupor
Co'ma-tose, Morbidly sleepy; lethargic.
Com'press, A bolster of soft linen cloth or cotton, used in dressing wounds.
Con-cat-e-na'tion, A series of links united, as a concatenation of causes.
Con'cave, Hollow, and arched or rounded, as the inner surface of a spherical body.
Con-ceive', To become pregnant.
Con-cep'tion, The act of conceiving.
Con-ces'sion, The act of granting or yielding.
Con-com'i-tant, Accompanying; conjoining with; attending.
Con'crete, To coalesce into one mass; to unite.
Con'di-ment, Seasoning; sauce; that which is used to give relish to food.
Con'dyle, A protuberance, or the end of a bone; a knot; a knuckle.
Con'flu-ent, Running together, and spreading over a large surface of the body.
Con-geal', To grow hard, stiff, or thick, from loss of heat.
Con-ges'tion, An unnatural accumulation of blood in any part of the body.
Con-glo'bate, To form into a ball or hard round substance.
Con-glom'er-ate, To collect into a round mass.
Con'i-cal, Round and decreasing to a point.
Co-ni'um, The hemlock.
Con-junc'tion, Union; connection; association.
Con'sti-pa-ted, Made costive.
Con-sti-pa'tion, A crowding or filling to hardness the intestinal canal.
Con-stit'u-ents, Materials of which a part is composed.
Con-ta'gion, Deleterious exhalations; infectious matter.
Con-ta'gious, Catching; that may be communicated by contact.
Con-tig'u-ous, Touching; meeting; joining at the surface or border.
Con-ti-nu'i-ty, Uninterrupted connection; close union of parts.
Con-tract-i-bil'ity, Quality of suffering contraction or lessening.

Con-tract'ing, Lessening in dimensions; shrinking.
Con-tra-in'dicated, Not indicated; not proper.
Con-tuse', To beat, to bruise.
Con-tu'sion, The act of bruising, or state of being bruised.
Con-tor'tion, A twisting or wresting a member of the body from its right place.
Con-tri'tion, The act of grinding or rubbing to powder.
Con-va-les'cence, The state of a body renewing its vigor after sickness.
Con'vex, The exterior surface of a spherical body; opposed to concave.
Con-vul'sion, Violent contraction of the muscles.
Con-vul'sive, Attended with convulsions or spasms; that produces convulsions.
Cor'pus-cles, Small particles or bodies that compose large ones.
Cor-po're-al, Material; opposed to spiritual, as our corporeal frame.
Cor'dial, That which increases strength and raises the spirits.
Corn'e-a, The transparent membrane in the fore part of the eye through which the rays of light pass.
Cor-rob'o-rant, A medicine that strengthens; strengthening.
Cor-ro'sive, Eating; consuming; as aquafortis.
Cor'ti-cal, Belonging to the external covering.
Cor'i-on, A membrane lining the womb in pregnancy.
Co-ry'za, Cold in the head; copious running from the nose.
Co'pi-ous, Abundant; plentiful.
Cos-met'ic, That which improves the complexion.
Couch'ed, Pressed down.
Coo'ing, Uttering a low sound, as a dove.
Coun'ter-Ir-ri-ta'tion, Irritation produced in another part.
Cra'ni-um, The skull.
Cra'ni-al, Pertaining to the skull.
Crap'u-lous, Drunk; sick by intemperance.
Cre'dence, To believe; to credit.
Crep'i-tis, Small crackling noise.
Cres'cent, The figure of the new moon.
Cres-cen'tic, Shaped like a crescent; pertaining to a crescent.
Cre'ten-ism, Deformed; idiotic.
Cre-ta'ce-ous, Chalky; abounding with or having the qualities of chalk.
Cri-te'ri-on, Rule; principle; a standard of judging.
Cri'sis, That change of a disease which indicates recovery or death.
Cru'ral, Belonging to the leg.
Cru'ral Nerve, The nerve of the leg.

Cu'li-na-ry, Relating to the kitchen, or art of cookery.
Cu'ra-tive, Tending to cure.
Cu-ta'ne-ous, Belonging to the skin; existing on the skin.
Cu'ti-cle, The exterior coat of the skin which rises in blisters.
Cu-tic'u-lar, Pertaining to the cuticle or scarf-skin.
Cyst, A bag, or tunic, including morbid matter in animal bodies.
Cys-ti'tis, Inflammation of the bladder.

De-bauch', Excess in eating or drinking; drunkenness.
De-bil'i-ty, Weakness; feebleness.
De-bil'i-tants, Medicines that reduce strength.
De-bris', Cast-off material.
De-cant', To pour off gently, as liquor from sediment.
De-cid'u-ous, Falling; having but a temporary existence.
De-coc'tion, A liquor in which a substance has been boiled.
Def-e-ca'tion, Purification; to purge.
Deg-lu-ti'tion, Act of swallowing.
Del-e-te'ri-ous, Destructive; injurious.
De-lir'i-ous, Disordered in intellect; wandering in mind.
De-lir'i-um, A disorder of the intellect connected with fever.
Del'toid, A term applied to a muscle of the shoulder.
De-jec'tion, A casting down; depression of spirits.
De-men'tia, Loss of mind; idiocy.
De-mul'cent, Softening; medicine which softens and mollifies.
De-nar'cot-ized, Deprived of narcotic power.
De-nud'ed, Laid bare; deprived of skin; naked.
Den-ti'tion, Teething; cutting teeth.
Dens'er, More compact; more solid.
De-pend'ent, Hanging down.
De-plete', To lessen in quantity, as blood; to weaken.
De-ple'tion, The diminishing the quantity of blood by blood-letting.
De-ple'to-ry, Calculated to weaken and obviate fulness of habit.
De-ple'tive, Causing weakness; reducing.
Dep're-cate, To pray against; to regret.
De-prave', To impair that which is good; to corrupt; to taint.
Dep'u-rate, To free from impurities.
Des-qua-ma'tion, Scaling off.
Di-a-be'tes, Morbid discharge of sweet urine.
Di-ag-no'sis, The art of distinguishing one disease from another.
Di-ag-nose', The act of distinguishing diseases.

Di-ag-nos'tic, Distinguishing.
Di-a-pho-ret'ic, Promoting perspiration; that which sweats.
Di-a-pho-re'sis, Increased perspiration or sweating.
Di'a-phragm, The muscular partition between the chest and abdomen.
Di-ar-rhœ'a, A watery purging of the bowels.
Di-as'to-le, A dilation of the heart, auricles, and arteries.
Di-ath'e-sis, A particular habit or disposition of body.
Di-e-tet'ic, Pertaining to diet, or the rules for regulating the quantity and kind.
Di-ges'tion, The process of decomposing food in the stomach, and recomposing it in a new form, and thus preparing it for circulation and nourishment.
Dig-i-ta'lis, The plant called *foxglove*.
Dil-a-ta'tion, The act of expanding, spreading, or extending.
Dil'u-ents, Bland drinks.
Di-lute', To thin; to weaken.
Di-lu'tion, The act of making more liquid; weakening.
Dim-i-nu'tion, The act of lessening or making smaller.
Dis-in-te-gra'tion, Separation of the composing particles of a body.
Dis'lo-cate, To put out of place; to disjoint.
Dis-sect', To cut in pieces.
Dis-tend, To stretch or spread in all directions; to dilate; to swell.
Di-u-re'sis, Excessive flow of urine.
Di-u-ret'ic, Medicine that increases the discharge of urine.
Di-urn'al, Daily; happening every day.
Do'lor, Pain; grief; lamentation.
Dom'in-ant, Prevailing; governing; predominant.
Dor'sal, Pertaining to, belonging to the back.
Douche, A jet or current of water directed with considerable force upon the body.
Dras'tic, Powerful; active purgation.
Draught, Quantity drank at once.
Drop'sy, An unnatural collection of water in any part of the body.
Duct, A tube to convey a fluid in an animal body.
Dul'ca-ma-ra, Bitter-sweet.
Du-o-de'num, The first of the small intestines; the twelve-inch intestine.
Du-o-de'nal, Belonging to the duodenum.
Du-o-den'i-tis, Inflammation of the duodenum.
Du'ra-Ma'ter and Pi'a-Ma'ter, Membranes of the brain.
Dys-pep'si-a, Bad digestion; difficulty of digestion.

Dys-pep'tic, Afflicted with bad digestion; a person so afflicted.
Dysp-nœ'a, Difficulty of breathing.
Dys-men-or-rhœ'a, Painful and difficult menstruation.
Dys'u-ria, Difficulty and pain in discharging urine.

Ec-cen-tric'i-ty, Deviation from that which is regular or usual; singularity.
Ec-chy-mo'ses, Tumors or livid spots on the skin, occasioned by an effusion of blood.
Ec-thy'ma, To rage; a cutaneous eruption.
Ec-ze'ma, A hot and painful eruption or pustule.
Ed'i-ble, Fit to be eaten as food; eatable.
E-dem'a-tous, Full of humors; swelling; dropsical.
Ef-fer-ves'cence, That commotion of a fluid which takes place when some part of the mass flies off in a gaseous form, producing innumerable small bubbles.
Ef-fete', Barren; worn out with age.
Ef-flo-res'cence, A redness of the skin; eruptions, as rash, measles, etc.
Ef-flu'vi-a, Noxious vapors.
Ef-fuse', To pour out; to spill.
Ef-fu'sion, The act of pouring out, as a liquid.
E-lab-o-ra'tion, Improvement by successive operations.
E-lic'it, To draw out; to deduce by reason or argument.
E-lim'i-na-ted, Expelled; thrown off; discharged.
E-ma'ci-ate, To cause to waste flesh and reduce to leanness.
E-ma-ci-a'tion, The act of wasting away and becoming lean.
Em'e-sis, Vomiting.
E-met'ic, Medicine that causes vomiting.
Em'bro-cate, To moisten and rub a diseased part with a liquid substance
Em-bro-ca'tion, The act of moistening, as with a sponge dipped in liquid
E-mol'li-ent, Softening; relaxing.
E-mit', To send forth; to throw or give out.
Em-men'a-gogue, A medicine that promotes the menstrual discharge.
Em-pir'i-cism, The practice of medicine without a medical education.
Em-py-e'ma, A collection of blood or pus in some cavity of the body, particularly of the thorax.
Em-py-reu-mat'ic, Having the smell and taste of burnt substances.
E-mulg'ent, A term applied to the blood-vessels of the kidneys.
E-mul'sion, Any milk-like mixture prepared by uniting oil and water by means of another substance.

E-munc'to-ries, Excretory ducts serving to carry off excrementitious matter.

En-am'el, The outside covering of the teeth.

En-ce-phal'i-tis, Inflammation of the brain.

En-ceph'a-loid, Like the brain.

En-dem'ic, A disease peculiar to certain districts.

En-do-card'i-tis, Inflammation of the lining membrane of the heart.

En-e'ma—En-e-ma'ta—Injections.

E-nerv'ate, Weakened; deprived of nerve-power.

En-gorge'ment, An accumulation and stagnation of the fluids in a part.

En-sue', To follow.

En-ter'ic, Pertaining to the bowels.

En-ter'i-tis, Inflammation of the bowels.

En'ti-ty, Being; existence; a real being.

En-u-re'sis, Involuntary discharge of urine.

E-phem'er-al, Diurnal; beginning and ending in a day; a fever of one day's continuance.

Ep-i-dem'ic—Ep-i-dem'ic-al—Generally prevailing; affecting great numbers.

Ep-i-derm'is, The outer skin.

Ep-i-gas'tric, Pertaining or belonging to the pit of the stomach.

Ep-i-gas'tri-um, Pit of the stomach.

Ep-i-glot'tis, A cartilage which prevents the food from entering the larynx and obstructing the breath.

Ep-is-pas'tic, Drawing; blistering.

Ep-i-lep'tic, Diseased with epilepsy; convulsed.

Ep-i-lep'sy, A disease in which the patient falls suddenly with spasms.

Ep-i-lep'tic Au'ra, A peculiar sensation often experienced before an attack of epilepsy.

E'pis-tax-is, Bleeding at the nose.

Ep-i-the'li-um, Scarf-skin.

E-pi-the'li-al, Relating or belonging to or like the scarf-skin.

E'qual-ize, To make equal.

E'qua-ble, Even; smooth; equal and uniform at all times.

E-qui-lib'rium, Equality of weight or force; equal balance.

E-ra'sion, A rubbing out; obliteration.

Er-rat'ic, Wandering; moving; irregular.

E-rec'tile, That which may be erected; state of being erect.

Er'u-dite, Learned.

Er-u-di'tion, With knowledge gained from books and instruction.

Er-uc-ta'tion, The act of belching wind from the stomach.
E-rup'tion, A breaking out of humors in pustules.
Er-y-sip'e-las, St. Anthony's fire.
Er-y-si-pel'a-tous, Eruptive; resembling or partaking of the nature of erysipelas.
Er-y-the'ma, An inflammation of the skin.
Er-y-the-mat'ic, Denoting a morbid redness of the skin.
Es'char, The crust or scab occasioned by burns or caustic applications.
E-the're-al, Consisting of ether or spirit; thin; light; subtile.
Eu-sta'chi-an Tube, A slender pipe affording a passage for the air from a cavity in the ear to the back part of the mouth.
E-vac'u-ant, A medicine which procures evacuations.
E-vac'u-a-ted, Emptied; freed from the contents; discharged.
E-vac-u-a'tions, Discharges by stool or other natural means.
E-vap-o-ra'tion, The conversion of a fluid into vapor or steam.
Ex-ac-er-ba'tions, Paroxysms; periodical increase of violence in a disease.
Ex-alt-a'tion, Increase of the strength, or refinement of the virtues, of bodies.
Ex-an-the'ma, An eruption accompanied by fever.
Ex-an-them'a-ta, Plural of Exanthema.
Ex-an-them'a-tous—Ex-an-the-mat'ic—Eruptive; morbid redness of the skin.
Ex-cise', To cut off.
Ex-cis'ion, A cutting out or off any part of the body.
Ex-co'ri-ate, To break or remove the skin by rubbing or beating.
Ex-co-ri-a'tion, Act of galling; state of being stripped of skin.
Ex'cre-ments, Discharges from the bowels.
Ex-cre-men-ti'tious, Pertaining to or containing excrement.
Ex-cres'cence, A superfluous or unnatural part, as a wart or tubercle.
Ex-cre'tion, Throwing off of matter no longer useful from the body.
Ex'cre-to-ry, Quality of separating and throwing off superfluous parts.
Ex-cru'cia-ting, Torturing; extremely painful.
Ex-fo'li-ate, To separate and come off in scales.
Ex-hale', To send out; to emit, as vapor or minute particles of a fluid or other substance.
Ex-ha'lant, Having the quality of evaporating.
Ex-ha-la'tion, Act or process of evaporation; that which is exhaled or emitted.
Ex-hib'it, To administer as medicine.
Ex-hi-bi'tion, The act of administering a remedy.

Ex-os-to'sis, An unnatural enlargement of a bone, or excrescence.
Ex-pec'to-rant, A medicine which promotes discharges from the lungs.
Ex-pec'to-rate, To discharge phlegm or other matter, by coughing, hawking, and spitting.
Ex-pec-to-ra'tion, Act of discharging phlegm or mucus from the lungs; also the matter thus discharged.
Ex-tens'or, A muscle which serves to extend or straighten any part of the body, as an arm or a finger.
Ex-tir-pa'tion, Total destruction; act of rooting out or eradicating.
Ex-trav'a-sa-ted, Forced or let out of its proper vessels, as extravasated blood.
Ex-tra'ne-ous, Not belonging to a thing.
Ex-ude', To discharge the moisture or juices of a living body through the pores of the skin.
Ex-u-da'tion, A sweating; a discharge of the moisture of the body.

Fæ'ces, Excrements.
Fal-lo'pi-an Tubes, Two tubes or ducts arising from the womb, discovered by Fallopius.
Far-i-na'ce-ous, Consisting or made of meal or flour; mealy.
Fas'ci-a, A bandage; a thin tendinous covering surrounding and binding the muscles in their places.
Fa-tu'i-ty, Feebleness of intellect; foolishness.
Fau'ces, The back part of the mouth terminating in the throat.
Fa'vose, Like the section of a honeycomb.
Feb'ri-fuge, Medicine that mitigates or removes fevers.
Fe'brile, Relating to or indicating fever, or derived from fever.
Fe'cal, Containing or consisting of excrements.
Fec'u-lent, Foul with impure substances.
Fet'id, Having an offensive smell, strong or rancid scent.
Fe'tor, Stench; offensive smell.
Fem'o-ral, Belonging to the thigh.
Fe'mur, The thigh-bone.
Fer-ru'gi-nous, Partaking of iron; containing particles of iron.
Fi'bre, Any fine slender thread.
Fi'brin, A peculiar organic substance found in animals and vegetables.
Fi'brous, Composed or consisting of fibres.
Fi'bro-Car-ti-lag'i-nous, Consisting of fibres and cartilage.
Fi-na'le, Close; termination; end.
Fis'tu-la, A deep tube-like ulcer.

Fis'sure, A crack or slit, or depression.
Flac'cid, Soft and weak; limber; yielding.
Flac-cid'i-ty, State of being yielding; soft; limber.
Flat'u-lence—Flat'u-len-cy—Affected with wind in the stomach and intestines.
Flat'u-lent, Windy; turgid with air.
Fla'tus A breath; a puff of wind; wind in the stomach.
Flexed, Bent, as a limb in a flexed position.
Flex'i-ble, That may be bent; not stiff; yielding to pressure.
Flex'ion, Act of bending; a part bent.
Flex'or, A muscle whose office it is to bend the part to which it belongs.
Flex'ure, The part bent; a joint; the form of bending.
Flor'id, Bright with color; flushed with red.
Flood'ing, An unnatural discharge of blood from the womb.
Flu'id-ounce, An ounce by measure; the twelfth part of a pint.
Fœ'tus, The child in the womb.
Fol'li-cle, A gland; a little bag in animal bodies; a folding; a cavity.
Fol-lic'u-lar, Relating to follicles.
Fo-ment-a'tion, A partial bathing by the application of flannels dipped in liquids.
Font'a-nels, The openings in a child's head.
Fo-ra'men, A little opening; a perforation.
For-mi-ca'tion, A sensation as of ants creeping over the skin.
Form'u-la, A prescription; a prescribed form; a rule or model.
Fos'sa, A kind of cavity in a bone, with a large aperture.
Frac'ture, A broken bone; to break or crack.
Fren'zy, Distraction; madness; violent agitation of the mind.
Fric'tion, The rubbing of the body with the hand, or brush, flannel, etc.
Fri'a-ble, Easily crumbled or pulverized, or reduced to powder.
Frig-o-rif'ic, Producing or generating cold.
Front'al Si'nus, A cavity between the two plates of the skull above the eye.
Fu'mi-ga-ted, Smoked; exposed to smoke.
Fu-mi-ga'tion, Act of smoking; vapors; scents raised by fire.
Func'tion, The action or office performed by an organ.
Func'tion-al, Pertaining to functions; performed by functions.
Fun'dus, Upper portion of the womb.
Fun'gus, Proud flesh; any morbid excrescence.
Fur-fu-ra'ceous, Scaly; branny; scurfy.

Fu'si-form, Shaped like a spindle.
Fu'tile, Of no effect; worthless.

Gan'gli-on, A natural enlargement in the course of a nerve
Gan-gli-on'ic Sys'tem, Nerves of organic life.
Gan'glia, The plural of ganglion.
Gan'grene, Mortification of living flesh, or of some part of a living animal body.
Gar'gle, A wash for the mouth and throat; to wash the mouth and throat.
Gas, A permanently elastic aëriform fluid, invisible except when colored.
Gas'e-ous, In the form of gas or an aëriform fluid.
Gas'tric, Belonging to the stomach.
Gas-tri'tis, Inflammation of the stomach.
Gas'tro-In-ter'i-tis, Inflammation of the stomach and bowels.
Gas-tral'gia, Neuralgia of the stomach.
Ge-lat'o San-guin'e-ous, Composed of gelatine and blood.
Gen'i-tals, Organs employed in generation.
Gen'i-tal Fis-sure, Orifice of the vagina; birthplace.
Ges-ta'tion, The act of carrying young in the womb from conception to delivery.
Gland, A secretory organ, in some cases very small, in others large, like the liver.
Gland'u-lar, Containing glands; consisting of glands; pertaining to glands.
Glob'ule, A small particle of matter, of a round or spherical form.
Glo'bous Hys-ter'i-cus, The sensation of a globe or ball in the throat.
Glot'tis, The narrow opening at the upper part of the windpipe.
Glu'tin-ous, Gluey; sticky; tenacious.
Glyc'e-rin, A transparent liquid, without color or smell, of a syrupy consistence.
Gon-or-rhœ'a, A morbid running of venereal taint.
Grad'u-ate, To divide any space into small regular intervals.
Gran-u-la'tion, The act of forming into grains; the grain-like eminences on a healing surface.
Gran'ules, Small particles; little grains.
Grav'id, Pregnant.
Gro-tesque', Of irregular forms and proportions; fantastical.
Gru'mous, Thick; clotted; concreted.
Gust'a-to-ry, Relating to the taste.
Gym-nas'tic, Exercises of the body intended for health.

Hab'i-tude, Custom; habit; customary manner or mode of life.
Hal-lu-cin-a'tion, Error; delusion; mistake.
Half-pack, A cold wet sheet folded and laid over the body and covered with a dry one.
Hæ-mat-e-me'sis, Vomiting of blood.
Hæ-mat-u'ria, Voiding bloody urine.
Hæ-mop'ty-sis, Bleeding from the lungs.
Hem-i-cra'nia, A pain that affects but one side of the head.
Hem-i-ple'gi-a, A palsy that affects one half of the body.
Hem'or-rhage, A discharge of blood, as from a ruptured blood-vessel.
Hem'or-rhoids, The piles.
He-pat'ic, Pertaining to the liver.
He-pat'i-tis, Inflammation of the liver.
Herb-iv'o-rous, Feeding on vegetables, as the ox and horse.
He-red'it-a-ry, That has descended from an ancestor.
Her-met'ic-al-ly, Closely; accurately.
Her'pes, Tetters; an eruption of the skin.
Her-pet'ic, Pertaining to herpes or eruptions of the skin.
Her'ni-a, A protrusion of some organ of the abdomen; a rupture.
Het'e-ro-dox, Contrary to truth and fixed principles.
Ho-mo-ge'ne-ous, Of the same kind or nature.
Hu'mid, Moist; damp; containing sensible moisture.
Hu-mid'ity, A moderate degree of wetness; moisture in the form of visible vapor.
Hyd'a-ted, An animal existence having the appearance of a bladder of water.
Hy-drar'ge-ri Sub-mu'ri-as, Calomel.
Hy'dra-gogue, A purge producing watery stools.
Hy'dro-cele, Dropsy of the scrotum.
Hy-dro-ceph'a-lus, Dropsy of the head or brain.
Hy-dro-cy-an'ic, A term applied to an acid.
Hy-dro-path'ic, Pertaining to hydropathy, or the curing of diseases with water only.
Hy-dro-per-i-car'di-um, Dropsy of the heart.
Hy-dro-pho'bi-a, Dread of water.
Hy-dro-tho'rax, Dropsy in the chest.
Hy-gi-en'ic, Pertaining to health.
Hy-gro-met'ri-cal, Readily absorbing and retaining moisture.
Hy-os-cy-a'mus, Henbane.
Hy-pat'i-tis, Inflammation of the liver.

Hy-per-ca-thar'sis, Over-purging.
Hy-per'tro-phy, Morbid enlargement of a part of the body from over nourishment.
Hyp-o-chon'dri-a, The region of the liver.
Hyp-o-chon-dri'a-sis, A disease characterized by low spirits and melancholy.
Hy-po-gas'tri-um, Space between the last rib and the hip.
Hy-poth'e-sis, Something assumed for the purpose of argument; a supposition.
Hy-po-thet'ic-al, Conditional; assumed without proof.
Hys-ter'ics—Hys-te'ri-a—A disease characterized by convulsive struggling; sense of suffocation; temper fickle.

I'chor-ous, Thin; watery; undigested.
Ich-thy-o'sis, A roughness of the skin which becomes thick, hard, and scaly.
Id-i-o-path'ic, Primary; independent of other diseases.
Id-i-o-syn'cra-sy, Any peculiar habit or disposition of body.
Id'i-o-cy, A defect of understanding; foolishness.
Il-i'i, Wings forming the upper part of the pelvis.
Il'i-ac, Pertaining to the lower bowels or ilium.
Il'i-us, Colic in the small intestines.
Il'i-um, A division of the small intestines.
Il-i-o-Coe'cal, Belonging to the small and first large bowels.
Il-lu'so-ry, Deceiving or intending to deceive by false appearances.
Im-be-cil'ity, Feebleness of body and mind; weakness.
Im-mo-bil'i-ty, Fixedness in place or state; immovableness.
Im-per'fo-rate, Having no opening; not perforated or pierced.
Im-per'vi-ous, Not to be penetrated or passed through.
Im'pe-tus, Force of motion.
Im-pe-ti'go, An eruption of the skin, consisting of pustules, clustering, yellow, and itching.
Im-put'ed, Charged to the account of; attributed; ascribed.
In-cep'tion, Beginning.
In-cip'i-ent, Commencing, as the incipient stage of fever.
In-cise', To cut in; to carve.
In-cised', Made by cutting; as an incised wound.
In-cis'ion, A cut; a gash.
In-con'ti-nence, Want of restraint; inability to restrain or prevent.
In-crus-ta'tion, A coat or crust on the surface of a body.

In-cu-ba'tion, The act of sitting on eggs for the purpose of hatching young.
In-du-ra'tion, Obduracy; stubbornness; hardness; process of hardening.
In-dig'en-ous, Native; produced naturally in a country.
In-dis-po-si'tion, Tendency to disease; slight disorder; not inclined to.
In-ert', Not active; destitute of power.
In-ert'ness, State of being inactive; quality of being destitute of power.
In-ex'pli-ca-ble, That cannot be explained or interpreted.
In'fant-ile, Pertaining to infancy; first period of life.
In-fe'ri-or Half, Lower half.
In-fest'ing, Disturbing; annoying.
In-fil'tra-ted, Passed through a porous substance.
In-fin-i-tes'i-mal, Infinitely small.
In-flam-ma'tion, Redness and swelling of a part, attended with heat and pain.
In-flat'ed, Swelled or distended; puffed up.
In-fu'sion, The act of pouring in; the liquor in which herbs have been steeped.
In-fu-so'ri-a, Microscopic animals and insects inhabiting water.
In-gest'a, Food.
In'gress; Having access into; entrance; power of entering.
In-hale', To draw into the lungs.
In-her'ent, Possessed naturally; not acquired.
In-ject', To throw in.
In-ject'ed, Thrown in.
In-jec'tion, The act of throwing in; a liquid medicine thrown into the body by a syringe or pipe.
In'nate, Inborn; native; natural.
In-nerv-a'tion, Nerve power.
In-oc'u-late, To insert contagious matter in the flesh.
In-or'din-ate, Irregularly; disorderly; immoderately.
In-or-gan'ic, Not formed with the organs or instruments of life.
In-nom-e-na'ti, Side bones of the pelvis.
In-scru'ta-ble, Unsearchable; that cannot be penetrated or understood.
In-so-la'tion; Exposure to the sun; action of extreme heat on the living system.
In-sol'u-ble, That cannot be dissolved, especially in water.
In-sol-u-bil'i-ty, Quality of not being soluble in a fluid.
In-spis'sa-ted, Thickened as a liquor.
In-teg'u-ment, A covering that invests the body, as the skin.

In-ter-cos'tal, Placed or lying between the ribs.
In'ter-im, The meantime; time between events.
In-ter-la'cing, Intermixing; inserting between.
In-ter'i-tis, Inflammation of the small intestines.
In-ter-mit'tent, Ceasing at intervals and then returning.
In-ter-mit'ting, Ceasing for a time; causing to cease.
In-ter-Os'se-ous, Situated between bones.
In'ter-sti-ces, Spaces between things.
In-tes'tin-al, Pertaining to the intestines.
In-tol'er-ance, The not enduring at all.
In-tro-ver'sion, The act of turning or state of being turned inwards.
In-tus-sus-cep'tio, The reception of one part within another.
In-unc'tion, The action of anointing.
In-vet'er-a-cy, Long continuance; firmness; obstinacy.
In-ver'sion, Turned inside out; changed in order.
In-vest'i-tures, Surroundings; that which invests, as the skin.
In-vest'ing, Surrounding closely; enclosing.
In-vig'or-a-ted, Strengthened; animated.
In-vol'un-ta-ry, Not voluntary; contrary to the will.
I-ras'ci-ble, Easily provoked; hasty; passionate.
Ir'ri-tant, That which excites and inflames.
I'ri-tis, Inflammation of the iris, or curtain of the eye.
Is-chu'ria, A stoppage or suppression of urine.
Is-chu'ria Re-na'lis, Suppression of the urine.
Is-chi'i, Lower part of the pelvis.
Is'o-la-ted, Separated; detached.

Jac-ti-ta'tion, Restlessness of the body.
Je-ju'num, The small intestines comprised between the duodenum and ilium.
Ju'gu-lar, A large vein in the neck.

Lac'er-ate, To tear; to rend.
Lach'ry-mal, Generating or secreting tears; conveying tears.
Lac'te-als, Vessels containing chyle.
Lac ta'tion, The act of suckling; the time of suckling.
Lac-tu-ca'ri-um, The concentrated juice of the common lettuce, used as a substitute for opium.
Lam'in-æ, Plates of bones.
Lam'in-a-ted, Plated; consisting of layers.

Lan'ci-nate, To tear; shooting pains.
Lapse, To glide; to pass slowly, silently, or by degrees.
La-ryn'ge-al, Pertaining to the larynx.
La-ryn-gi'tis, An inflammation of the larynx.
Lar'ynx, The upper part of the wind-pipe or trachea.
Las'si-tude, Weariness; dulness; languor.
Lat-er-i'tious, Of the color of bricks; applied to sediment deposited in urine.
La'ten-cy, State of being concealed; not perceptible.
Lat'er-al Half, One side.
Lax'a-tives, Medicines that relax the bowels and relieve costiveness.
Leth'ar-gy, Morbid sleepiness; dulness.
Len'tor, Tenacity; viscidity; thickness of fluids; sizy or viscid humors in the blood.
Leu-cor-rhœ'a, The whites.
Le'sion, A hurting; wound; injury.
Lig'a-ture, A band or bandage; a cord or string.
Lin'iment, A thin soft ointment.
Lim'pid, Pure; clear; transparent.
Li-thot'o-my, The art or practice of cutting for stone in the bladder.
Lith'i-a-sis, Stone in the bladder or kidneys.
Liq'uor Am-nii, The waters of the fœtus.
Liv'id, Black and blue.
Lo-chi'a, Evacuations which follow childbirth.
Lo-co-mo'tion, The act or power of moving from place to place.
Lo'tion, A liquid preparation for washing some part of the body.
Lu'bri-cate, To make smooth or slippery.
Lum-ba'go, A rheumatic affection of the muscles about the loins.
Lum'bar Ver'te-bra, The bones forming the small of the back.
Lu-es Ve-ne-rea, Syphilis.
Lymph, A colorless fluid in animal bodies, contained in the lymphatics.
Lym-phat'ics, Vessels which carry white fluids.

Mac'er-ate, To soften and separate the parts of a substance by steeping it in a fluid, or by the digestive process.
Mag-ne'sia cum Po-tas'sæ, Magnesia and potash.
Ma-la'ri-a, Bad air; that species of air that produces or tends to produce disease.
Ma'laise, A general bad state of the system.
Ma-lain'a, Depravity of the blood; a tendency to putrefaction.

Ma-lig′nant, Dangerous to life.
Ma-lig′ni-ty, Destructive tendency; virulence.
Mal-con-form-a′tion, Ill form; disproportion of parts.
Mal-form-a′tion, Irregular or wrong formation.
Mam-mæ′, The breasts.
Mam′ma-ry Gland, Pertaining to the breasts.
Ma′ni-a, Madness; derangement.
Ma′ni-a-a-Potu, Madness from drinking; delirium tremens.
Mas′si-ter, The main muscle of the jaw.
Mas′ti-cate, To chew.
Ma-tu′ri-ty, Of full ripe age.
Max′il-la-ry Si′nus, A cavity in the upper jaw.
Me-a′tus, An opening which leads to a canal or duct.
Med′ic-a-ment, A medicine; a healing application.
Med′ic-a-ted, Prepared or furnished with medicine.
Me-dul′la Spi-nal′is, Spinal marrow.
Med′ul-la-ry Sub-stance, Brain matter.
Me-læ′na, Hemorrhage from the bowels.
Mel′ior-ate, To make better; to improve.
Mem′brane, A thin white flexible skin; a web of fibres.
Mem′bra-nous, Consisting of membranes.
Men-stru-a′tion, The act or process of menstruating or discharging the menses.
Men′ses, Monthly courses of females.
Men-or-rha′-gia, Hemorrhage from the womb.
Me-nin′ge-al, Pertaining to the investing membranes of the brain.
Me-nin′gi-tis, Inflammation of the investing membrane of the brain.
Mes′en-ter-y, A fatty membrane connecting the intestines.
Me-tas-ta′sis, A translation of a disease from one part to another.
Me-tal′lic Trac′tors, Fine metallic points, which by being applied to a part were supposed to extract pain.
Me-thod′ic-al, Arranged in convenient order; regularly disposed.
Mi-as′ma, Infecting poisonous substances floating in the air.
Mi-as-mat′ic, Partaking of the qualities of poisonous effluvia; bilious.
Mi-cro-scop′ic, Very small; visible only by the aid of a microscope.
Mic-tu-ri′tion, Act of passing urine.
Mim′ic, To imitate; one who imitates.
Mi′nor, Inferior.
Mis-car′riage, A bringing forth before the time.
Mit′i-gate, To make less severe; to alleviate; to assuage.

Mo'dus Op-e-ran'di, Mode of operating.
Mo-ment'um, Force; quantity of motion in a moving body.
Mon-o-ma'ni-a, Derangement on one particular subject.
Mor'bid, Diseased; sickly; not sound and healthful.
Mor-bif'ic, Causing disease; generating a sickly state.
Mor'phi-a, A vegetable alkaloid extracted from opium.
Mu'ci-lage, A glutinous, slimy substance.
Mu-ci-lag'in-ous, Slimy; ropy; moist, soft, and lubricous.
Mu'cous Rale, The sound occasioned by mucus in the air-passages.
Mu'cus, A sticky, tenacious fluid.
Mu'cous, Viscid or slimy; gummy; tenacious.
Mu'co Se'rous, Mixture of mucus and serum.
Mu'co San-guin'e-ous, A mixture of mucus and blood.
Mu'cal, Of the nature of mucus.
Mus'cæ Vol'i-tan-tes, Imaginary dark spots in motion.
Mus'cles, The organs of motion, consisting of bundles of fibres.
Mus'cu-lar, Strong; brawny; vigorous.
My-e-li'tis, Softening of the brain or spinal marrow.

Nar-cot'ic, Medicines producing torpor or sleep.
Nar'co-tine, An alkaloid obtained from opium.
Nar'co-tize, To bring under the effects of a narcotic; to make sleepy.
Na-res, Nostrils.
Nates, The buttocks.
Nau'sea, Sickness of the stomach, with a propensity to vomit.
Nau'se-ants, Substances producing nausea.
Nau'se-a-ting, Loathing; making sick; producing disgust.
Ne-cro'sis, Dry gangrene; an inflammation of a bone, ending in death.
Ne-phral'gi-a, Disease or pain in the kidneys.
Ne-phri'tic, Pertaining to the kidneys; relieving disorders of the kidneys.
Ne-phri'tis, Inflammation of the kidneys.
Nerv'ous, Easily agitated; irritable.
Neu-ra-mil'la, Very minute nerves.
Neu'tral-ize, To render inactive; to destroy particular properties.
Neu-ral'gi-a, Painful affections of the nerves.
Ni'dus, A nest; a repository for eggs.
Noc-turn'al, Done or happening at night.
Nod'ules, Small irregular lumps or knots.
Nod'u-la-ted, Having little knots or lumps.

No-sol'o-gist, One who classifies diseases systematically.
No-sol'o-gy, A systematic classification of diseases, with names and definitions.
Nos-o-log'ic-al, Pertaining to nosology; systematic.
Nor'mal, Natural; healthy.
No'lens Vo'lens, Willing or unwilling; whether he will or not.
Nox'ious, Hurtful; unwholesome.
Nu'cle-i, Parts about which matter is collected; central part of a body; the plural of nucleus.
Nu'ga-to-ry, Trifling; useless; of no force.
Nui'sance, That which annoys; things offensive.
Nu'tri-ent, Nourishing; promoting growth.
Nu'tri-tive, Having the quality of nourishing.
Nu-tri'tious, Nourishing.

O-bes'i-ty, Excessive fatness.
O-bese', Fat; gross.
Ob-tend', To oppose; to stretch against or before.
Ob-tend'ing, Opposing.
Ob-tuse'ness, Dulness; want of quick sensibility.
Oc-cip'it-al, Pertaining to the back part of the head.
Oc'ci-put, The back part of the head.
Oc'ci-pa-ted, Like the occiput or back of the head.
Œ-dem'a-tous, Swelled, as in a dropsical state of the skin.
Œ-de'ma, A tumor.
Œ-soph'a-gus, The gullet.
Of-fic'i-nal, Relating to or sold in a shop, as medicine.
O-men'tum, A membranous covering of the bowels attached to the bowels; *the apron.*
O'nus, The burden
O-pac'i-ty, Darkness; not penetrable to rays of light.
O-pal-es'cent, Reflecting a milky or pearly light from the interior.
O'pa-line, Milky white.
O-paque', Not transparent; impervious to light.
Oph'thal-mi-a, Inflammation of the eye or its appendages.
O'pi-ate, Medicine producing sleep or inaction.
Or-gan'ic, Possessed of organs; produced by organs.
Or-gan-iz'a-ble, That may be organized or constructed systematically.
Or'gasm, Immoderate excitement or action.
Or'i-fice, The mouth or aperture of a tube, pipe, or other cavity.

Or-thop-nœ'a, Disease in which the patient can breathe only in an erect posture; difficulty of breathing.
Os'cil-la-to-ry, Swinging; moving backward and forward, as a pendulum.
Os-cil-la'tion, Vibration; moving backward and forward.
Os'se-ous, Bony; resembling bone.
Os'si-fied, Changed into bone, or hard substance like bone.
Os Coc'cy-gis, The last bone of the spinal column; crupper-bone.
Os Il'i-um, Haunch-bone.
Os Is'chi-um, Hip-bone.
Os In-no-mi-na'ti, Side of the pelvis.
Os Pu'bis, Front of the pelvis.
Os Sac'rum, The hinder part of the pelvis
Os Fem'o-ris, The thigh-bone.
Os U'te-ri, Mouth of the Womb.
O-tal'gi-a, Earache.
O'va-ries—O-va'ri-um—The parts in which the fœtus is supposed to be formed.
O'vum, An egg.
O'va, Plural of Ovum.
Ox'y-mel, A mixture of vinegar and honey.
O-zæ'na, Inflammation of the nostrils.

Pal'li-ate, To reduce in violence; to lessen; to abate.
Pal'lid, Pale; wan; deficient in color.
Pal'lor, Paleness.
Pal'pi-tate, To flutter; to beat, as the heart.
Pan'cre-as, A gland of the abdomen; the sweet-bread.
Pan-cre-at'ic, Pertaining to the pancreas.
Pa-pil'læ, Little teats; the termination of nerves.
Pap'u-læ, Pimples; an eruption of the skin.
Pap'u-lous, Full of pimples.
Pap'il-la-ry, Little teats.
Par-a-cen-te'sis, The perforation of the body for the evacuation of fluids.
Par'a-site, Plants or animals living on the bodies of others, and deriving their nourishment from them.
Par-a-lyt'ic, Affected with palsy; inclined or tending to palsy.
Pa-ral'y-sis, Palsy.
Par'a-lyze, To affect with palsy.
Par'a-mount, Superior to all others; of the highest order.
Par-a-ple'gi-a, A kind of palsy affecting the lower part of the body.

Pa-ren'chy-ma, The proper substance of an organ.
Pa-ri'e-tal, Pertaining to a wall; defending, like a wall.
Pa-ri'e-tes, Parts.
Pa-rot'id Glands, Glands below the ear.
Par'ox-ysm, A periodical fit or attack of a disease.
Par-tu'ri-ent, Bringing forth; about to bring forth.
Par-tu-ri'tion, Act of being delivered or of bringing forth
Pa-tel'la, The knee-pan, or cap of the knee.
Path-o-log'ic-al, Relating to pathology, or doctrine of disease.
Pa-thol'o-gist, One who treats of pathology.
Pa-thol'o-gy, Doctrine of the cause and nature of disease.
Pau'ci-ty, Scantiness; smallness of quantity.
Pec'cant, Corrupt; bad; not healthy.
Pec-to-ril'o-quy, When a patient's voice, distinctly articulated, seems to proceed from the point of the chest on which the ear or stethoscope is placed.
Ped'i-lu-vi-um, A bath for the feet.
Pel'li-cle, A thin skin or film.
Pel-lu'cid, Perfectly clear; transparent.
Pel'vis, Cavity of the body constituting the lower part of the abdomen.
Pel'vic Vis'cera, The organs contained in the pelvis.
Pem'phi-gus, An eruption of vesicles.
Per-cus'sion, The shock produced by the collision of bodies; the act of striking one body against another.
Per'co-late, To strain through; to filter.
Per-co-la'tion, The act of straining, as liquor through porous stone.
Per'fo-rate, To bore through; to make holes.
Per-fo-ra'tion, The act of boring or piercing through.
Per-i-car'di-um, The membranous sack enclosing the heart.
Per-i-car'di-al, Belonging to the pericardium.
Per-i-car'di-tis, Inflammation of the pericardium.
Per-i-ne'um, The part between the vagina and fundament.
Pe-ri-od'ic-al, Happening at regular intervals.
Pe-ri-o-dic'i-ty, The quality of being periodical.
Per-i-os'te-um, A nervous vascular membrane investing the bones.
Per-i-os'ti-sis, Inflammation of the periosteum.
Pe-riph'e-ry, Circumference of a circle.
Per-i-stal'tic, The motion by which the intestines push forward their contents.
Per-i-to-ne'um, The membrane which invests the bowels.

Per-i-to-ne'al, Pertaining to the peritoneum.
Per-i-ton-i'tis, Inflammation of the peritoneum.
Per'me-ate, To pass through the pores or interstices of a body.
Per'me-a-ting, Passing through the pores of a body.
Per-ni'cious, Destructive; tending to injure or destroy.
Per-sist'ent, Continuing; not falling off.
Per-spi-ra'tion, Sweat; matter perspired.
Per-vert'ed, Turned from right to wrong.
Pes-ti-len'tial, Producing or tending to produce infectious diseases.
Pes'sa-ry, An instrument for supporting the uterus.
Phan'tasm, Something imagined; vain airy appearance.
Phar-ma-ceu'ti-cal, Pertaining to the art or knowledge of preparing medicines.
Phar-yn'ge-al, Belonging to or connected with the pharynx.
Phar'ynx, The top of the gullet or œsophagus.
Phe-nom'e-na, Appearances.
Phle-bot'o-my, The act or practice of bleeding for the cure of diseases.
Phlegm, The viscid matter secreted in the throat.
Phleg'mon, An inflammatory tumor.
Phleg'mon-ous, Inflammatory.
Phleg-ma'sia Do'lens, Milk-leg.
Phre-ni'tis, Inflammation of the brain.
Phthis'ic-al, Breathing hard; having or belonging to the phthisic; consumptive.
Phos-phat'ic, Containing phosphorus.
Phys-i-o-log'i-cal, Relating to the science of the properties and functions of living beings.
Phys-i-ol'o-gy, The science of life.
Pil'lu-lar, In the form of pills.
Pi'a Ma'ter, A thin membrane immediately investing the brain.
Pla-cen'ta, The afterbirth.
Plas'tic, Yielding easily; capable of being moulded or shaped.
Pledg'et, A fold of lint or cotton laid over a wound to imbibe the matter discharged.
Pleth'o-ra, Fulness of habit; excess of blood.
Pleth'o-ric, Having a full habit of body.
Plen'i-tude, Fulness; plethora; complete competence.
Pleu'ra, A thin membrane covering the inside of the thorax, also investing the lungs.
Pleu'ri-tis, Inflammation of the pleura.

Plex'us, A union of fibres, nerves, or vessels.
Pneu-mo'ni-a, Inflammation of the lungs, or lung fever.
Pol'y-pus, A tumor with a narrow base resembling a pear.
Por'tal Veins, Veins entering the liver.
Pos-te'ri-or, Later in time; coming after.
Post-Mor'tem, An examination of a body after death.
Pos-te'ri-or Na'res, Back part of the nostrils.
Po-ta'tion, A draught; drink.
Po'tent, Powerful; strong; efficacious.
Po-ten'ti-al Cau'te-ry, The destruction of vitality with other substances, instead of a red-hot iron.
Pre-cor'dia, Same as Epigastrium—Pit of the stomach.
Pre-co'cious, Premature; rapid growth in body or mind.
Pre-dis-posed', Previously inclined, as the body to disease
Pre-ma-ture'ly, Too soon; before the proper time.
Pre-mo-ni'tion, Previous warning or notice.
Pre-mon'i-to-ry, Giving warning or notice.
Pre'puce, The foreskin; a prolongation of the skin of the penis.
Pre-ter-nat'u-ral, Beyond or different from what is natural.
Pri-o'ri, Before.
Pro'cre-ate, To generate; to produce.
Pri'ma-ry, First in time; original.
Pri-ma'ri-ly, Originally; first.
Pro-lapsed', Fallen down or out.
Pro-lap'sus, The falling down or out.
Prog-no'sis, The art of foretelling the course and event of a disease.
Pro-gen'i-tor, A forefather.
Pro-phy-lac'tic, Defending from disease; a preventive.
Prop'a-gate, To generate; to continue to multiply.
Prop-a-ga'tion, The continuance or multiplication of the kind.
Pro'te-an, Readily assuming different shapes.
Pro-trude', To be thrust out or forward.
Pro-tu'ber-ance, A swelling or tumor on the body.
Pros'tate Gland, A gland situated at the neck of the bladder.
Prox'i-mate Cause, The immediate cause preceding and producing the effect.
Pseu'do-Mem'bra-nous, A membrane artificially formed.
Pu'ber-ty, Ripe age.
Pu'bes, The share-bone.
Pu-den'da, The parts of generation.

Pu'er-ile Breath'ing, Breathing like a child.
Pu-er'pe-ral, Pertaining to childbirth.
Pul'mo-na-ry, Relating to or affecting the lungs.
Pul'mo-na-ry Œ-de'ma, Dropsy of the lungs.
Pulp, A soft mass; marrow.
Pulse, To beat, as the arteries.
Puls'a-to-ry, Beating; throbbing; as the heart or arteries.
Punc'tum Sa'li-ens, The point at which life begins.
Punc'ture, To pierce with a small instrument.
Pun'gent, Sharp; acrid; biting.
Purg'a-tive, A medicine that evacuates the bowels.
Pur-pu'ra, An eruption of small purple specks and patches.
Pus, The yellowish-white matter secreted in ulcers and wounds.
Pu'ru-lent, Consisting of or partaking of the nature of pus.
Pus'tules, Small swellings on the skin, or blisters.
Pus-tu-la'tion, Forming pustules; covered with pustules or blisters.
Py-lo'rus, The lower and right orifice of the stomach.
Py-ro'sis, Water-brash, or heartburn.

Quan'tum, The quantity; the amount.
Quo-tid'ian, Returning daily.
Qui'nia, Quinine.

Rab'id, Furious; raging; mad, as a rabid dog.
Ra'di-ate, To emit or send out in direct lines from a point or surface, as heat
Rad'i-cles, The extreme minute vessels, as the capillaries.
Ram-i-fi-ca'tions, Branchings; divisions and subdivisions
Ram'i-fied, Divided into branches.
Rale, A morbid sound attending certain diseases of the lungs.
Ra-ti-oc-i-na'tion, Act or process of reasoning.
Ra-ti-o-na'le, A detail with reasons.
Re-ac'tion, Any action in resisting other action or power.
Re-ces'sion, Withdrawing; retiring; relaxing.
Rec'tum, The last of the large intestines.
Re-cum'bent, Reclining; in a lying posture.
Re-cur'rent, Returning from time to time.
Re-cu'per-a-tive, Tending to recovery; giving health and strength.
Re-dun'dance, Excess; superabundance.
Red'gum, An eruption so called.

Re-duc'tion, A lessening.
Re'flex, Directed back.
Re-frig'er-ant, Cooling; allaying heat, as a medicine or drink.
Re-gur-gi-ta'tion, The act of throwing back again; reäbsorption.
Reg'i-men, Regulation of food, air, exercise, etc.
Re-ject', To refuse to receive; to cast off.
Re-lapse', To fall back or return from recovery.
Re-lax', To slacken or loosen; to open; to remit or abate.
Re-mit'tent, Abatement; cessation.
Re-mis'sion, Moderation; diminution of the violence of a disease.
Rep-a-ra'tion, The act of repairing; restoration.
Re-par'a-tive, Restoring; repairing.
Re-pel'lent, Medicine having power to drive back morbid humors.
Re-ple'tion, Fulness of blood; plethora.
Re'nal, Relating to the kidneys.
Re-solv'ents, Medicines having power to disperse inflammation and prevent the suppuration of tumors.
Res-o-lu'tion, The dispersing of inflammation; the breaking up and disappearance of fever.
Res'o-nance, A return of sound, or echoing back.
Res-pi-ra'tion, The act of breathing.
Res-pi'ra-to-ry, Serving for respiration; pertaining to respiration.
Re-su-mé', A summing up; a condensed statement.
Re-sus-ci-ta'tion, The act of reviving from apparent death.
Re-sump'tion, Act of resuming; taking back.
Re-tard'ed, Hindered in motion; delayed.
Re-ten'tion, Keeping back; power of retaining, as some natural discharge.
Retch'ing, Heaving; to vomit.
Re-tic'u-la-ted, Netted; resembling net-work.
Ret'i-na, The nervous coat of the eye.
Ret'ro-grade, Declining from a better to a worse state.
Re-tro-ces'sion, The act of going back.
Re-tro-ver'sion, A turning or falling backward.
Re-vul'sion, The act of diverting a disease from one part of the body to another.
Re-vul'sive, Having the power of revulsion or withdrawing.
Rhon'chus, A rattling.
Ri-gid'i-ty, Stiffness; want of pliability.
Rig'ors, A convulsive shuddering with cold.
Ro-sa'ce, An eruptive disease.

Ro-se'o-la, Scarlet-rash.
Ru-be'o-la, The measles.
Ru-be-fa'ci-ents, External applications producing redness of the skin.
Ru'gose, Wrinkled; full of wrinkles.
Rup'ture, To break; to burst; protrusion of the contents of the abdomen.

Sac'rum, Arch-bone of the pelvis.
Sa'line, Consisting of salt; of the nature of salt.
Sa-li'va, The fluid secreted in the mouth.
San'gui-fi-ca-tion, The production of blood.
San-guin'e-ous, Abounding with blood; constituting blood.
San-guin'o-Nerv'ous, Partaking of the sanguineous and nervous temperaments.
Sa'ni-ous, Emitting unhealthy discharges, as from sores.
Sa'ni-es, A thin reddish discharge from wounds or sores.
Sa'pi-ent, Wise; sage; discerning.
Sar'co-cele, A fleshy firm tumor of a testicle, not inflammatory.
Sat'u-rate, To impregnate; to fill up to fulness.
Sat'urn-ine Lo'tion, Lead water.
Sca'brous, Rough; rugged; having hard, short, rigid points.
Scal'pel, A dissecting-knife; a surgical instrument.
Scap'u-la, The shoulder-blade.
Scar'i-fy, To scratch or cut the skin; to make small incisions with a lancet.
Scar-la-ti'na, Scarlet fever.
Sci-at'ic—Sci-at'i-ca—A rheumatic affection of the hip-joint; pertaining to or affecting the hip.
Scir'rhus—Scir'rhous—Indurated; hard; knotty, as a gland.
Scle-rot'ic-a, The firm white outer coat of the eye.
Scor-bu'tus, Scurvy.
Scro'tum, The bag containing the testicles.
Se-ba'ceous, Suet-like; made of tallow or fat.
Se-crete', To separate a fluid or substance from the blood, as the glands.
Se-cre'tion, The act of secreting; the matter secreted.
Se'cre-to-ry Ves'sels, Organs that separate fluids from the blood.
Sed'a-tive, Medicine allaying irritability; moderating; composing.
Sed'en-ta-ry, Accustomed to sit much; with but little exercise.
Sed'i-ments, Settlings; dregs.
Sed'u-lous, Steadily industrious; diligent; persevering.

Se'men, The seed.
Sem'i-Con'flu-ent, Slightly running together.
Sen-so'ri-um, The seat of sense and perception.
Sen'tient, Having sensation.
Se-que'la, That which follows; consequence.
Se'rous, Thin; watery.
Se'ro-Pu'ru-lent, Mixture of serum and pus.
Se'rous Mem'brane, A membrane which secretes serum.
Se'rum, The thin transparent part of the blood.
Se'ton, A twist of silk, thread, or horse-hair, drawn through the skin with a needle, thus producing an ulcerous opening.
Sex'u-al, Pertaining to sex, or distinguishing the sex.
Sham-poo'ing, Rubbing and kneading the body after a bath.
Si-al'o-gogue, A medicine that promotes the flow of the saliva.
Sig'moid Flex'ure, The last curve of the colon before it terminates in the rectum.
Sim'u-late, To feign; to counterfeit; to assume the appearance of something without the reality.
Sin'a-pism, A poultice of flour, mustard, and vinegar.
Si'nus, An elongated abscess; a cavity in a bone or other part.
Slough, To come off; to separate from the sound flesh.
Som'no-lent, Sleepy; drowsy.
Sol'u-ble, That may be dissolved.
So-lu'tion, State of being dissolved; process of dissolving into a fluid.
Sor'des, Foul matter; excretions; useless or rejected matter.
Spasm, Violent contraction of the muscles or muscular fibres.
Spas-mod'ic, Relating to or consisting in spasm.
Spe-cif'ic, Definitely particular; an efficacious medicine.
Spec'u-lum, An instrument for dilating and keeping open certain parts of the body, so as to be seen.
Spec'tral, Like a spectre.
Sphinc'ter, Muscles that contract the orifices they surround.
Sphinc'ter A'ni, The sphincter muscle of the rectum.
Spi'nal Me-nin'gi-tis, Inflammation of the membranes covering the spinal marrow.
Spi'nal My-e-li'tis, A depreciation of the substance of spinal marrow.
Spi'nal, Pertaining to the spine or back-bone.
Spi'na Bi-fi'da, Softening of the back-bone.
Spine, The back-bone.
Spi'nous, Full of spines; armed with thorns; thorny.

Spi'nous Pro'cess-es, Projections on the bones of the back.
Spleen, The milt; a spongy viscus.
Splen'e-tic, Peevish; fretful.
Sple-ni'tis, Inflammation of the spleen.
Spu'ta, Spittle; matter ejected from the lungs.
Squa'mous, Scaly; covered with scales.
Ster-co-ra'ceous, Partaking of the nature of excrements.
Ster'num, The breast-bone.
Ster-nu'ta-to-ry, Having the quality of exciting sneezing.
Stim'u-lants, Articles producing a transient increase of vital energy and strength of action in the heart and arteries.
Stim'u-li, Stimulants.
Sthen'ic, Producing a morbid increase of vital energy.
Sto-mach'ic, Pertaining to the stomach; strengthening the stomach.
Sto-ma-tor-rha'gia, Hemorrhage from the stomach.
Stra-mo'ni-um, The thorn-apple.
Stran'gu-ry, Difficulty of voiding urine.
Stran'gu-la-ted, Obstructed.
Strych'nia, The active principle of the nux vomica.
Strict'ure, A drawing or morbid contraction of any passage of the body.
Strid'u-lous, Making a small harsh sound or creaking.
Stro'ma, A bed; that in which something is imbedded.
Struc'tu-ral, Pertaining to the organization of bodies.
Stru'mous, Scrofulous.
Stupe, Cloth dipped in warm medicaments; sweating bath.
Stu'por, A suspension of sensibility; suppression of sense.
Sub'a-cute, Acute in a moderate degree.
Sub-cla'vi-an Vein, The great vein under the collar-bone.
Sub-cu-ta'ne-ous, Situated under the skin.
Sub-mu'cous, Partly mucous.
Sub-nau'se-a-ting, Nauseating slightly; making slightly sick.
Sub-or'din-ate, Inferior in order; in rank below.
Sub-serv'i-ent, Subordinate; acting as an assistant.
Sub-si'dence, The act of sinking; falling; an abatement.
Sub-sul'tus, Twitching, or convulsive motion.
Sub-sul'tus Ten'di-num, Convulsive jerking of the leaders.
Su-dor-if'ic, Medicine producing or causing sweat.
Suf-fuse', To overspread, as with a fluid or tincture.
Sul'phu-ret-ted, Having sulphur in combination.
Su-per-fi'cial, Shallow; being on the surface; not deep or profound.

Su-per-in-cum'bent, Lying or resting on something.
Su-pine', Drowsy; indolent; careless.
Sup-pos'i-to-ry, A kind of solid clyster.
Sup'pu-rate, To generate or form pus or matter.
Sup-pu-ra'tion, The process of forming pus in a wound or abscess.
Su-prem'a-cy, Supreme; highest in station or power.
Sur-viv'al, An outliving; living beyond the life of another.
Su'i-Gen'er-is, Of a peculiar nature.
Sut'ures, The seams uniting the bones of the skull.
Sy-co'sis, A tubercular eruption upon the scalp or bearded part of the face.
Symp-to-mat'ic, Indicating the existence of something else pertaining to symptoms.
Sym-pa-thet'ic Nerve, The great nerve in front of the spine.
Sym'phy-sis, The union of bones by cartilage.
Syn'co-pe, A fainting or swooning.
Syn-o'vi-al, Secreting a lubricating fluid, as the glands in the joints.
Syph'i-lis, An ulcerous disease on the genitals.
Syph-i-lit'ic, Pertaining to syphilis.
Sys-tol'ic, Pertaining to the contraction of the heart.

Tac'tus Eu-ri-di'tus, Learned touch.
Teg'u-ment, A cover or covering.
Tem'per-a-ment, The peculiar habit of the body.
Tem'per-a-ture, State; degree of quality, as the heat of the body.
Ten'don, A hard insensible cord or bundle of fibres which attaches muscles to bones.
Te-na'cious, Adhesive; sticky; glutinous.
Te-nes'mus, Straining of the bowels, as in flux.
Tense, Stretched; strained to stiffness; drawn tight.
Tep'id, Lukewarm; moderately warm.
Te-rax'i-cum, Extract of Dandelion.
Ter'tian, Occurring every third day.
Ter'ti-a-ry, Third; of the third formation.
Tes'ti-cles, Male organs of generation.
Tes'sel-a-ted, Checkered; formed in little squares.
Tet'a-nus, Locked-jaw.
Te-tan'ic, Pertaining to or denoting tetanus.
Text'ure, The arrangement of parts forming an organ.
Ther-a-peu'tic, Curative; that pertains to the healing heart.

Ther-a-peu'ti-cal, Pertaining to the employment of remedies.
Tho-rac'ic, Pertaining to the thorax or chest.
Tho-rac'ic Duct, The trunk of the absorbent vessels.
Tho'rax, The cavity of the chest.
Tib'i-al, Pertaining to the large bone of the leg.
Tic Dou-lou-reux', Neuralgia of the face.
Tinc'ture, Spirit containing medicinal properties in solution.
Tinc'ture O'pii, Laudanum.
Tin'ni-tus Au'ri-um, Ringing in the ears.
Tis'sues, Texture or organization of parts.
Tit-il-la'tion, A tickling.
Ton'ic, Medicine that increases strength; bracing.
To-nic'i-ty, Tone.
Ton'sil, A glandular body in the throat or fauces.
Ton-sil-li'tis, Inflammation of the tonsils.
Top'ic-al, Local; external.
Tor'pid, Dull; stupid; inactive.
Tor'por, Numbness; loss of motion or power of motion.
Tor'mi-na, Severe pain.
Tort'u-ous, Twisted; wreathed; winding.
Tra'che-a, The wind-pipe.
Trans-lu'cent, Semi-transparent; admitting rays of light without permitting objects to be seen.
Trans'verse, Lying across, or in a cross direction.
Trau-mat'ic Tet'a-nus, Tetanus caused by wounds.
Tre'mor, A shivering or shaking; involuntary trembling.
Tro'car, A surgical instrument for tapping dropsical persons and the like.
Tu'ber-cle, A pimple; a swelling; a tumor.
Tu-ber'cu-lous, Affected with tubercles.
Tu-ber-cu-lo'sis, A disease attended with tubercles; consumption; scrofula.
Tu'bu-lar, Having the form of a tube or pipe.
Tu-me-fac'tion, A tumor or swelling; process of rising or swelling.
Tu'me-fied, Swelled; enlarged.
Tu'mid, Enlarged; distended; swelled.
Tu'mor, A morbid enlargement of a particular part.
Tur'bid, Thick; muddy; not clear.
Tur-ges'cence, Act of swelling; state of being swelled.
Tur'gid, Swelled; bloated; distended.
Tym-pa-ni'tes, A distension of the abdomen by wind.

Tym-pan'ic, Drum-like; relating to tympany or tympanites.
Tym'pan-um, The drum of the ear.

Ul'cer, A sore, generally ill-conditioned.
Ul'cer-ate, To be formed into an ulcer; to become ulcerous.
Ul'cer-ous, Having the nature of an ulcer; discharging matter.
Ul'tra, Beyond; in the extreme.
Um-bil'i-cate, Navel-shaped; depressed in the middle.
Um-bil'i-cus, The navel.
Unct'u-ous, Fat; oily; greasy.
Un-di-lu'ted, Not diluted; not thinned or weakened.
Un-gu-ent'um, In the form of an ointment.
U'ni-form, Even; regular.
Un-phar-ma-ceu'tic-al, Not according to correct principles of mixing medicine.
U'ra-tis, Combinations with uric acid.
U're-a, A peculiar crystallized substance held in solution in the urine.
U're-ter, A tube conveying the urine from the kidneys to the bladder.
U-re'thra, The canal by which the urine is conducted from the bladder and discharged.
U'rine, Fluid secreted by the kidneys.
U'rin-a-ry, Pertaining to urine; holding urine.
U'ric, Of or belonging to urine.
Ur-ti-ca'ria, Nettle-rash.
U'te-rus, The womb.
U'ter-ine, Pertaining to the womb.
U'te-ro-Ges-ta'tion, Gestation in the womb from conception to birth.
U'vu-la, A small conical body projecting from the middle of the soft palate.

Vac'cine, Belonging to or matter of the cow-pox.
Va-cu'i-ty, Emptiness; state of being unfilled.
Va'ga-ries, Whims; wild freaks; wandering of the thoughts.
Va-gi'na, The passage to the womb.
Vag'in-i-tis, Inflammation of the vagina.
Val-e-tu-di-na'ri-an, Sickly; weak; infirm.
Valv'u-lar, Containing valves.
Var'i-ces, Dilated veins.
Var'i-cose, Enlarged or permanently dilated.
Var-i-cel'la, Chicken-pox.

Va-ri-o'lous, Having pits like those of small-pox.
Va'ri-o-loid, Modified small-pox.
Va-ri'o-la, Small-pox.
Va'ri-o-lus, Small-pox matter.
Vas'cu-lar, Pertaining to vessels; full of vessels.
Ve'hi-cle, A substance in which medicine is taken.
Vel'um Pen'du-lum Pa'la-ti, The soft palate or fleshy substance hanging over the tongue.
Vein, A tube carrying blood to the heart.
Ve-ne're-al, Connected with sexual intercourse.
Ven'e-ry, Sexual intercourse.
Ve'na Ca'va As-cend'ens, The great ascending vein.
Ve'nous, Contained in the veins; belonging to the veins
Ve'nous Rad'i-cles, The extreme or capillary veins.
Ven-e-sec'tion, Bloodletting.
Ven'ti-late, To give circulation to pure air.
Ven'tri-cle, A cavity either in the heart or brain.
Ver'te-bræ, Joints in the spine or back-bone.
Ver'tex, The crown or top.
Ver'ti-go, Giddiness; dizziness.
Ve-ra'trum Vi-ri'de, The white hellebore.
Ves'i-cle, Any small membranous cavity in animals or vegetables.
Ves'i-ca-ting, Blistering.
Ve-sic'u-lar, Consisting of vesicles; pertaining to vesicles.
Vi'bra-to-ry, Quickly moving back and forth.
Vi-ca'ri-ous-ly, In the place of another.
Vi-cis'si-tudes, Changes; revolutions.
Vi'ce-Ver'sa, The case being reversed.
Vir'u-lent, Poisonous.
Vi'rus, Contagious matter of an ulcer.
Vi'rous, Poisonous; hurtful; baneful.
Vis'ce-ra, The organs contained in any cavity of the body.
Vis'ce-ral, Pertaining to the viscera; feeling; sensibility.
Vis'cid, Glutinous; tenacious; sticky.
Vis'cus, An entrail; an internal organ of the body.
Vis'cous, Clammy; sticky; adhesive.
Vis Med'i-ca-trix Nat'u-ra, Vital principle.
Vi'tal, Containing life; essential to life.
Vi-tal-i-za'tion, Act of infusing the vital principle; giving life.
Vi'ti-ate, To injure the substance or qualities of a thing.

Vi'ti-a-ted, Depraved; rendered impure; defective.
Viv'i-fy-ing, Enduing with life; communicating life.
Vol'a-tile, Subject to evaporate; to fly off in vapor.
Vo-li'tion, The power of willing or determining.
Vol'vu-lus, A descent of an upper portion of the bowels through the rectum.
Vo-ra'cious, Greedy in eating; ravenous; very hungry.
Vo-rac'i-ty, Greediness of appetite.
Vul'va, The birthplace.

Wheals, An eruption in the form of stripes

Zest, Relish; to give a relish.
Zo'o-phyte, A low order of animal existence, as the coral insect.

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